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A

TREATISE

ON

EPIDEMIC CHOLERA;

INCLUDING AN HISTORICAL ACCOUNT

OF

ITS ORIGIN AND PROGRESS,

TO

THE PRESENT PERIOD.

COMPILED FROM THE MOST AUTHENTIC SOURCES.

BY A. BRIGHAM, M. D.

HARTFORD:
PUBLISHED BY H. AND F. J. HUNTINGTON.

1832.

CHART
Shewing the Progress
OF THE
SPASMODIC CHOLERA
Longitude from Washington
Longitude West from Greenwich
Longitude East from Greenwich
Arctic Circle
Equator
Tropic of Cancer
UPPER CANADA
LOWER CANADA
NORTH WEST TERRITY
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
MICHIGAN
ONTARIO
NEW YORK
PENNSYLVANIA
ILLINOIS
INDIANA
OHIO
KENTUCKY
VIRGINIA
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
LOUISIANA
ATLANTIC OCEAN
BAHAMA ISLANDS
SWEDEN
LAPLAND
FINLAND
DENMARK
BRITISH ISLES
FRANCE
SPAIN
ITALY
AUSTRIA
PRUSSIA
TURKEY
BLACK SEA
MEDITERRANEAN
BARBARY
AFRICA
GUINEA
ABYSSINIA
EGYPT
ARABIA
PERSIA
MEKRAN
CABUL
TARTARY
RUSSIAN EMPIRE
ASIA
MONGOLIA
CHINESE EMPIRE
THIBET
Nepaul
Bay of Bengal
Madras
Ceylon
Bombay
Calcutta
Jessore
Canton
Philipine Isles
CHINA SEA
EAST INDIA ISLANDS
BORNEO
Celebes
Java
BIRMAH
MALACCA
SUMATRA
INDIAN OCEAN
MADAGASCAR
Madeiras
Canaries
Mouths of the Mississippi
Mouths of the Niger
Sea of Ob
Longitude West 82 from Greenwich
Longitude 75 East from 90 Greenwich

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ADVERTISEMENT.

The following work has been chiefly selected from numerous but authentic Reports, Treatises, Lectures and Essays upon the cholera, which has prevailed epidemically for the last 15 years. It is intended to furnish a correct history of the disease, together with all the most important practical information that has been published respecting its nature, causes and methods of treatment.

For this purpose the writings of those practical medical men, who have witnessed the disease in Asia, on the continent of Europe, in England, the Canadas, and the United States, have been resorted to in making this selection.

The history of the cholera anterior to 1817, has been chiefly derived from the Report of the Madras Medical Board, drawn up by order of the government, in 1824. The subsequent history of the disease, or from 1817 to 1831, was written by H. G. Lombard, M. D., and was originally published in French, in the *Biliotheque Universelle* for 1831, from which I have translated it.

The other sources from which the principal part of the volume has been derived, are indicated at the proper places in the body of the work. They are principally the official reports made by medical men to the governments of the different countries where the disease has prevailed, the valuable medical periodical journals, for several years past, particularly The Medico Chirurgical Transactions, The

Edinburgh Medical and Surgical Journal; The Medico Chirurgical Review; The American Journal of Medical Sciences; the Treatises, Essays, Lectures and Letters of different medical men in various parts of the world, who have had great experience in the disease.

A. B.

Hartford, August 20th, 1832.

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INTRODUCTION.

The pestilence which is now raging in various parts of the United States, and which during the last fifteen years has advanced over a large portion of the globe, is now the most absorbing topic throughout the civilized world. By many it is considered a new disease, while others say it was known in the earliest ages. Whether the latter is true or not, we have no account of its ever having prevailed extensively and epidemically, and for years in succession previous to 1817. We do not know, however, but some of the destructive diseases which swept off vast numbers of the human race in remote times were of the same nature. Our accounts of them are so imperfect that we are unable to determine their nature. The learned M. Montbroin, conceives that a similar disease destroyed 70,000 of the subjects of King David from Dan even to Beersheba. (II. Sam. xxiv.) Josephus' account of this pestilence is as follows: "The terrible malady seized them before they were aware and brought them to their end suddenly, some giving up the ghost immediately, with very great pains, and bitter grief, and some were worn away by their distempers, and had nothing remained to be buried, but as soon as ever they fell, were entirely macerated; some were choked, and greatly lamented their case, as being also stricken with a sudden darkness; some there were who as they were burying a relative, fell down dead, without finishing the rites of funeral. There perished of this disease, which began with the morning, and lasted till the hour of dinner, 70,000."

Several other mortal pestilences are alluded to by those who have written concerning the diseases of ancient times.

Dr. Webster in his work on Epidemic and Pestilential Diseases,* mentions several that prevailed in this country about the time of the first settlement by the English.

A pestilential and mortal disease prevailed among the Indians in 1618, and to such an extent as to greatly diminish their numbers. When our ancestors arrived two years after, they found the bones of those who perished, in many place unburried. But the accounts we have of these early epidemics are so imperfect that we are unable to determine the nature of the malady.

In the third year of the 87th Olympiad, answering to the 430th preceding the Christian era, a plague broke out in the city of Athens, which was far more mortal than any which before that time had been known to the Greeks. In a short time it destroyed an immense multitude of the poor, and five thousands of the flower of the Athenian armies. It broke out in the second year of the Peloponnesian war, when all the inhabitants of the Athenian territory were crowded into the city to avoid the destructive ravages of the Lacedemonians.

The population of Athens was thus increased from 50,000 to 400,000. "The city," says Thucydides, "was not able to receive so large a conflux of people, many were forced to lodge in the turrets of the walls," &c. The enemies of Pericles, says Plutarch, "attributed the occurrence and the great ravages of the pestilence to the multitude of people he had collected into the city in the heat of summer." And this was probably the true cause. The exact nature of the disease we do not know, though the symptoms of the disease are described by Thucydides; yet he makes no mention of the swellings of the glands which usually occur in the plague. Dr. Webster thinks

* We are gratified to learn that the venerable author of this valuable and philosophical work is about publishing a new edition, with additions, and a continuation to the present time.

the disease resembled the worst forms of yellow fever. The disease like the cholera first appeared in that part of the city where there was the least cleanliness and among the ill conditioned poor, here it "fell suddenly" and thence gradually extended to other parts of the city. For a full and philosophical account of this plague at Athens, see the first article, in the first volume of the Medical Repository, by the late Dr. E. H. Smith of New York.

During the reign of Justinian I. A. D. 542, a universal and destructive plague prevailed to such an extent as to dispeople some of the fairest portions of the world. "This pestilence," says Procopuis, "which almost destroyed the human race and for which no cause can be assigned but the will of God, ravaged the whole world, without regard to age, sex or condition and prevailed during the winter and summer and all seasons of the year." It seized Constantinople in the spring of 543 and according to Gibbon, "during three months, five, and at length ten thousand persons died each day at Constantinople; many cities of the East were left vacant and in several districts of Italy the harvest and the vintage withered on the ground."

Those attacked by the disease were affected by swellings and carbuncles and the characteristic symptoms of the plague.

In 1345 the most general and destructive pestilence commenced that the world has ever known. This disease like the *cholera* made its first appearance in the East. It commenced in Cathay, China, in 1345, and was so deadly that at least one half or two thirds of the human race perished in 8 years. It did not entirely disappear until after about 20 years, and after having overrun the world.

This awful pestilence was preceded by great and general disorder of the elements such as had never before been known. The mortality fell chiefly upon the lower classes

of society; not one king or prince of any nation died of the disease, and the English nobility and people of distinction and the higher orders of the church generally escaped.

Before the disease invaded Christendom, according to a report made to the Pope, it had swept away twenty three millions eight hundred thousand persons in the East in the course of a single year. At length it passed into Italy; and at Florence 60,000 persons died in one year. The malady proceeded north to Germany and France. At Paris it cut off 50,000 persons; and at Lubeck according to several accounts it swept away 90,000 persons in one year, of whom 1,500 died in the space of four hours.

It reached England in 1348, where it raged to an extent almost incredible. According to the historians of that time, out of the whole population, hardly one person in ten was left alive. In the city of Norwich 57,374 persons died in six months, and at York and London it was horrible beyond imagination. In London 50,000 persons were burried in one grave yard. Such was the consternation throughout England that the cattle were neglected and run at large, the corn perished for want of reapers and whole villages were depopulated.

This disease has been compared to the cholera, but the symptoms were somewhat different. It was usually accompanied by violent affection of the head and stomach, glandular swellings, blisters over the body and hemorrhages from the mouth and nose. (For a full account of this great plague in the 14th century, see Fraser's Magazine, for May 1832.)

The last pestilence which I shall notice, is the Great Plague of London which prevailed in 1665, and the memory of which has been rendered immortal by eloquent descriptions in prose and poetry. It first attracted attention in London about the middle of summer, and was preceded and accompanied by a peculiar state of the atmosphere.

Its ravages soon augmented, and in the autumn 8,000 persons died in one week, though two thirds of the inhabitants had fled the city. From this time it grew milder, and by the spring, had totally vanished. According to the bills of mortality, London lost upwards of 68,000 inhabitants by the plague, in 1665. This was the last plague that appeared in Great Britain.

These are but a small number of the visitations of pestilence which the generations of men have experienced. They have all been, to be sure, most afflicting events, not only from the destruction of human life which they produce, but from the pain and suffering which those who survive must endure, and the destitution of innumerable widows and orphans, and helpless beings. But though exceedingly distressing calamities for a time, yet history shows that ultimately they may not prove injurious to the welfare of mankind in general. Though many valuable members of society are cut off at such times, yet in general the greatest ravages are among those least necessary to the welfare of society. They have most frequently occurred in thickly populated places, in countries overflowing with inhabitants, like Hindostan and China, where the common necessaries of life, even in productive seasons, are furnished only in sufficient quantity to barely allow a miserable existence to the great mass of population, and when a failure of crops occurs, multitudes die from famine. The writings of Malthus and Say, and the tables of Sussmilch, and others, shew that in many countries, after the plague had swept off a third of the population, the annual number of births became greater than before the pestilence.

In all countries, innumerable beings die of want, not that they actually starve for want of food, but for want of the care of parents or nurses, or medical advice, or rest, which many in all countries are unable to have. In general, pestilential and mortal epidemics have apparently been

caused by a want of some of the necessaries of life, among the people,—very frequently, by famine, or want of food. But not always a want of food, but a want of pure air, cleanliness, warm clothing and lodging, or rest, or medical, and other attention, which none but those who are supplied with other products necessary for man can obtain. They therefore must occur whenever the population is not supplied with the necessaries of life.

Hence we see all such general calamities are most fatal in cities and populous places. In the Hebrew scriptures, the prophets Jeremiah and Ezekiel often speak of the pestilence sent in judgement upon men, but it is curious to notice that it is the peculiar scourge of *cities*. The siege of Jerusalem is thus foretold,—'I will smite the inhabitants of this *city*, they shall die with a great pestilence. He that abideth in the city *shall die*, but he that goeth out and falleth to the Chaldeans that besiege you, *he shall live*.' Jer. xxi. Ezek. chap. v. declares thus,—'those in the field shall die by the *sword*, and he that is in the city, by famine and pestilence;' and again, chap. xxxiii. 'they that are in the wastes shall fall by the sword, and him that is in the open field, will I give to the beasts to be devoured, and they that be in the *forts* and caves shall die by pestilence.'

But such a calamity may, in other ways, prove beneficial to succeeding generations. It teaches, or should teach, mankind how to live; to be frugal, to provide beforehand for sickness, to be temperate in all things; to avoid and prevent accumulations of filth, and impure air, and crowded rooms and cities.

Take for instance the present epidemic, and though no language can describe the suffering, the agony, and the innumerable evils that it brings upon mankind; yet will it pass away without inculcating any important truth? will it teach no profitable lesson to the present and succeeding generations?

Considering the enquiring and investigating age in which

this calamity has appeared, we can hardly believe but that some of the causes which has produced or aggravated this pestilence will be ascertained, and may hereafter be avoided, and thus succeeding generations profit by the sad experience of this.

It can hardly fail to prove one of the greatest *reformers* the world has ever known. It can not fail to teach mankind *temperance*, *frugality* and innumerable other virtues. It will apprise men of the danger of small ill ventilated and crowed houses, streets and cities. It will guide them in constructing and locating dwellings—and large towns; and it may teach men to forsake cities, and the strife for gain, and seek quiet and competence in the pure air of the country. This is no unimportant lesson for man to learn. And but few more necessary for the moral advancement of mankind. Large cities, are the chief hot-beds and nurseries of vice. They congregate within their walls a large and combined mass of ignorant, vicious, evil disposed beings, that benevolence does not and cannot rescue, and which thwart all the efforts of the philanthropic; and serve as schools of vice and dissipation for rising generations. They also by their prodigality, imprudence and sensuality, contaminate the atmosphere and produce disease and aggravate pestilence.

While therefore every measure should be adopted likely to arrest the present general and distressing calamity, let us not forget to profit by it when it has past; and by keeping steadily and constantly in mind the causes that have now produced or greatly aggravated the disease, endeavor to prevent its recurrence by our conduct hereafter.

EPIDEMIC CHOLERA MORBUS.

HISTORY OF THE EPIDEMIC CHOLERA,

PREVIOUS TO 1817.

When the Epidemic Cholera Morbus appeared at Jessore, in 1817, it was supposed to be a *new disease;* but upon enquiry, it was ascertained that a complaint similar in all its symptoms, had not only been described in several publications on the diseases of India, but had been noticed in the earliest records of medicine. Hippocrates speaks of it, and it is described by Aritæs, of Cappadocia.

Bontius, a Dutch physician residing at Batavia, and who wrote in 1629, thus accurately describes it.

"Besides the diseases above treated of as endemic in this country, the cholera morbus is extremely frequent; in the cholera, hot, bilious matter, irritating the stomach and intestines, is incessantly, and copiously discharged by the mouth and anus. It is a disorder of the most acute kind, and therefore requires immediate application. The principal cause of it, next to a hot and moist disposition of the air, is an intemperate indulgence of eating fruits, which, as they are generally green, and obnoxious to putrefaction, irritate and oppress the stomach by their superfluous humidity, and produce an æruginous bile. The cholera might, with some degree of reason, be reckoned a salutary excretion; since such humors

are discharged in it, as, if retained, would prove prejudicial. However, as by such successive purgations, the *animal spirits are exhausted, and the heart, the fountain of heat and life, is overwhelmed with putrid effluvia, those who are seized with this disorder generally die, and that so quickly, as in the space of four and twenty hours, at most.*

Such, among others, was the fate of Cornelius Van Royen, steward of the Hospital of the sick, who being in perfect health at six in the evening, was suddenly seized with the cholera, and expired in terrible agony and *convulsions* before twelve o'clock at night; the violence and rapidity of the disorder surmounting the force of every remedy. But if the patient should survive the period above-mentioned, there is great hope of performing a cure.

This disease is attended with a weak pulse, difficult respiration, and coldness of the extreme parts; to which are joined, great internal heat, insatiable thirst, perpetual watching, and restless and incessant tossing of the body. If together with these symptoms, a cold and fetid sweat should break forth, it is certain that death is at hand."

Sydenham, and other writers*, notice its prevalence in London, in 1669—1676, and in 1741. It is said to have prevailed in several parts of Europe, from 1600 to 1780. At Paris extensively in the summers of 1730, 1750, and again in 1780, and in Switzerland in 1696.

Anterior to the present age, the epidemic or pestilential form of Cholera, had, however, rarely appeared in Europe. It had occurred more frequently in India, and its ravages there had been greater.

* Huxham, Dr. Brady, &c.

Lebegue de Presle says it prevailed in Uppe Hindostan in 1762, where it destroyed 30,000 blacks, and 800 Europeans.

Dr. Paisley, in a letter dated at Madras, 12th February, 1774, and published by Curtis, in his work on diseases of India, says that the cholera is often epidemic there, and destroys quickly great numbers of the Blacks, though it prevails among both Europeans and natives. He observes, "it is totally a disease of highly putrid bile, which operates on the system as poison, and brings on *sudden prostration of strength, and spasms over the whole surface of the body.*"

M. Sonnerat, in his travels in India from 1774 to 1781, says that cholera prevailed epidemically on the Coromandel coast, and at one period assumed a very malignant character, destroying above sixty thousand people, from Cherigam to Pondicherry. The following is his account of it.

"There is also another epidemical disorder, which reigns, and in twenty-four hours, or sometimes less, carries off those who are attacked. It never appears but in cold weather."

"Debauchees, and those who have indigestions, are attacked with a looseness, or rather with an involuntary flux of the excrementary matter become liquid, but without any mixture of blood. They have no remedy for this current of the bowels,* which they call a sharp flux, but leave the cure to the care of nature."

"The flux of this kind which reigned some years ago, spread itself in all parts, making great ravages: above sixty thousand people, from Cherigam to Pon-

* Probably "cours de ventre," in the original. The edition here quoted, is a translation by Francis Nagnus, Calcutta, printed 1773.

dicherry, perished. Many causes produced it. Some were attacked for having passed the night and slept in the open air; others for having eat cold rice and curds; but the greater part for having eat after they had bathed and washed in cold water, which caused an indigestion, an universal spasm of the nervous kind, followed by violent pains and death, if the patient was not speedily relieved. This epidemical disorder happened during the Northerly winds in December, January, and February; when they ceased the malady disappeared. The symptoms of this disorder were a watery flux, accompanied with vomiting and extreme faintness, a burning thirst, an oppression of the breast, and *a suppression of urine.* Sometimes the deceased felt violent cholicky pains; often lost his speech and recollection, or became deaf, *the pulse was small and concentered*, and the only specific which Choisel, a foreign Missionary, found, was treacle and Drogue amere. The Indian physicians could not save a single person."

"There is great reason to imagine that the perspiration being stopped and reflowing into the mass of blood, by finding its way to the stomach and bowels, occasion the vomiting, which termitated by this flux."

"That which followed, two years after, was the most dreadful. It did not proceed from the same cause as the first, as it began in July and August: it first showed itself by a watery flux, which came in an instant, and sometimes cut the deceased off in less than four and twenty hours. Those who were attacked had thirty evacuations in five or six hours; which reduced them to such a state of weakness that they could neither speak nor move. *They were often without pulse; the hands and ears were cold; the face*

lengthened; the sinking of the cavity of the socket of the eye was the sign of death; they felt neither pains in the stomach, cholics, nor gripings. The greatest pain was a *burning thirst.* Some brought forth worms by stool; others by vomiting. This cruel pestilence affected all the castes in general, but particularly those who eat meat, as the Parias. The native Physicians succeeded no better in their treatment of this disorder, which was again renewed during the north winds."

The epidemic cholera morbus, prevailed at the island of Mauritius in 1819 and 1820, and from enquiries then made by a Committee of British Medical Officers, it was ascertained that a similar disease prevailed there in 1775, and which continued about two months, causing great mortality, particularly among the blacks and people of color. A hurricane was supposed to have put a stop to its ravages.

The disease raged with great violence in India, in 1781. Mr. Jameson, Secretary to the Calcutta Medical Board, thus alludes to it:

"A division of Bengal Troops, consisting of about 5,000 men, was proceeding under the command of Colonel Pearse of the Artillery, in the Spring of 1781, to join Sir Eyre Coote's Army on the Coast. It would appear that a disease resembling cholera had been prevalent in that part of the country, (the Northern Circars,) some time before their arrival; and that they got it at Ganjam on the 22d March. It assailed them with almost inconceivable fury. Men previously in perfect health dropt down by dozens; and those even less severely affected were generally dead or past recovery within less than an hour. The spasms of the extremities and trunk

were dreadful; and distressing vomiting and purging were present in all. Besides those who died, above five hundred were admitted into hospital on that day. On the two following days, the disease continued unabated, and more than one half of the Army was now ill."

"The disease to which we allude, has not been confined to the country near Ganjam. It afterwards found its way to this place (Calcutta); and after chiefly affecting the native inhabitants, so as to occasion a great mortality during the period of a fortnight, it is now generally abated, and pursuing its course to the northward."

The disease was referred to the great fatigue of the soldiers, after marching for several days and nights, through sand and salt water, exposed to heavy dews and a damp and variable atmosphere.

Curtis, in his work on the diseases of India, speaks of the unusual prevalence of cholera in 1782.

He says "that the fleet in which he served, joined Sir Edward Hughes's squadron at Madras, in the beginning of 1782; in May of that year, his ship, the Seahorse, arrived at Trincomalee, and he says, 'The mort de chien, or cramp, I was also informed by the attending Surgeon, had been very frequent and fatal among the seamen, both at the hospital and in some of the ships, particularly in the Hero and Superb.' The Seahorse had no case of the disease till the 21st of June, when between that day and the 25th they had eight cases.

"In every one of the eight cases the symptoms were so much alike, both in order and degree, that a description of any one would answer almost equally well for every other. Any difference that took place

was in the suddenness of the attack, or the rapidity with which the symptoms succeeded each other. In all of them the disease began with a watery purging, attended with some tenesmus, but with little or no griping. This always came on some time in the night, or early towards morning, and continued some hours before any spasms were felt; and light affections of this kind being very common in the country, the patients seldom mentioned them till they began to be more severe, and extended to the legs or thighs. This purging soon brought on great weakness, coldness of the extremities, and a remarkable paleness, sinking and lividity of the whole countenance. Some at this period had some nausea, and retching to vomit, but brought up *nothing bilious*. In a short time the spasms began to affect the muscles of the thighs, abdomen, and thorax, and lastly they passed to those of the arms, hands and fingers; but I never saw, then or afterwards, those of the neck, face or back at all affected. The rapidity with which these spasms succeeded the first attack, and their severity, especially as affecting the muscles of the thorax and abdomen, denoted in general the degree of danger in the case. The affection is not, as in *tetanus*, confined to a single muscle, or to a certain class of muscles only. Neither does it, as in the spasmus clonicus, move and agitate the members. It is a fixed cramp in the belly of the muscles, which is gathered up into a hard knot, with excruciating pain. In a minute or two this relaxes, is again renewed, or the affection passes to others, leaving the miserable sufferer hardly an interval of ease; and lastly, it passes from one set to another; from those of the inferior extremity to those on the upper parts, leaving the former free.

The patients complain much of the pain of these cramps; think they obtain some relief by friction of the parts, and cry to their companions to rub them hard. As the disease proceeded, the countenance became more and more pale, wan, and dejected; the eyes became sunk, hollow, and surrounded with a livid circle. The pulse became more feeble, and sometimes sunk so much as not to be felt at the wrist, in two or three hours after the spasms came on. But so long as it could be felt, it was but little altered in frequency. If the spasms happened to intermit, it would sometimes rise a little, and the countenance assume a better look. The tongue was generally white, and more or less furred towards the root; the patients had all great thirst, or rather a strong desire for cold drinks; but there was no head ache or affection of the sensorium commune throughout."

"The coldness of the extremities, which was perceptible from the very first, continued to increase, and spread over the whole body, but with no *moisture* in the skin till the severity of the pain and spasms forced out a clammy sweat, which soon became profuse. The hands now began to put on a striking and peculiar appearance. The nails of the fingers became livid, and bent inwards; the skin of the palms became white, bleached, and wrinkled up into folds, as if long soaked in cold water; the effect, no doubt, of the profuse cold sweat, which is one of the most pernicious and fatal symptoms of the disease, both from the effect it has in such a climate, of exhausting the strength, and in abstracting heat from the system. In some of the present cases, and in many others after this, we had recoveries from the severest degrees of spasmodic affection; even where the pulse had been for hours

completely lost at the wrist, and the body perfectly cold; but never of any who had these profuse cold clammy sweats, and where the hands had put ont his appearance."

"All this while the purging continued frequent, and exhibited nothing but a *thin watery matter or mucus*. In many, the stomach became at last so irritable, that nothing could be got to rest upon it; but every thing that was drank was spouted out immediately; without straining or retching. The countenance and extremities became livid, the pulsations of the heart more quick, frequent, and feeble; the breathing began to become laborious and panting; and, in fine, the whole powers of life fell under such a great and speedy collapse, as to be soon beyond the power of recovery. In this progression, the patient remained from three to five or six hours from the accession of the spasms; seldom longer. These began at last to abate, but with more internal oppression, great jactitation, panting and gasping for breath, from the diminished action of the respiratory organs; for there were no marks of oppression or effusion on the lungs; and the motion of the heart, so long as it could be felt, became more and more quick and irregular, till death came at last to the relief of the miserable sufferer. Sometime before that event took place, the spasms gradually abating, left the sufferers entirely, and so much possession of their faculties did they retain, that they would continue to talk sensibly to their messmates, to the last moment of their life, even when the whole body had become perfectly cold, and all pulsation of the heart had ceased for a long time to be distinguishable."

"About the middle of July, 1782, I entered on du-

ty at Madras Hospital. Here again, I had occasion to see many more cases of the mort de chien. It was frequent in the fleet in the month of August, and beginning of September, the season at which the land wind prevails on this part of the coast. We had some cases in the hospital in the end of October, and November after the monsoon, but few in comparison."

Girdleston, also, alludes to the ravages of the same epidemic, among the newly arrived troops from England, in his Essay on the Spasmodic affections of India.

He observes, "Spasms were the first disease which appeared amongst the troops who arrived at Madras in October, 1782, under the command of Major General Sir John Burgoyne. More than fifty of these fresh men were killed by them within the first three days after they were landed in that country, and in less than a month from that time, upwards of a thousand had suffered from attacks of this complaint."

"The symptoms which commonly first presented themselves were coldness of the surface of the body, especially of the hands, feebleness of the pulse, and spasmodic contractions of the lower extremities, soon extending to the muscles of the abdomen, diaphragm, and ribs. As the spasms advanced, the muscles might be seen to assume the rigidity of cartilages; sometimes causing the body to remain immoveably extended, sometimes bending the trunk through its whole length, anteriorly; and sometimes, though seldomer, backwards. The parts in which the spasms began generally remained rigid; but those which were subsequently seized with them, had momentary intermissions of the contractions; the only

intervals of relief experienced by the patient from the most tormenting pains. The hands and feet then generally became sodden, with cold sweat, the nails livid, the pulse more feeble and frequent, and the breath so condensed as to be both seen and felt, issuing in a cold stream at a considerable distance. The thirst was insatiable, the tongue whitish, but never dry; vomitings became almost incessant; the spasms, cold sweats, and thirst, increased with the vomitings; which last, if not checked, soon terminated the existence of the patient." "In this manner, most commonly, was the succession of phenomena; but often they were so rapid in their attack, that they seemed to seize the patient all in conjunction instantaneously."

"In some few, the extremities remained warm; in others also the spasms were only clonic or convulsive. Some died in the first hour of the attack; others lived a day or two with remissions; when they died, either of universal spasms or an apoplexy. On dissection of the bodies after death, it appeared that no injury had been sustained by the brain, liver, gall-bladder, stomach or heart. The prognosis of this disease is formed with greater certainty from the warmth or coldness of the extremities, than from either the universality of the spasms, or the frequency or steadiness of the pulse. Thus if the spasms were ever so general, with warmth of the extremities, there was no immediate danger; on the contrary if the spasms were ever so trifling, with coldness, there was every danger to be feared."

It is also stated in the Bengal Report, that the cholera appeared at Hurdwar on the Ganges, in April, 1783. Its prevalence at this place is very deserving of attention.

Hurdwar on the Ganges, is a place held particularly sacred by the Hindoos. At this time an immense multitude had assembled on occasion of a religious festival.

It was computed that from one to two millions of people had assembled here on the banks of the holy Ganges, where they passed several days and nights, crowded together, and exposed to a burning sun by day, and to heavy dews and cold blasts from the mountains at night.

The cholera suddenly appeared among this crowd of devotees, and was undoubtedly generated among them, and raged with such violence as to destroy above 20,000 people in the short space of eight days. But it is a remarkable fact that this disease did not spread from this point, not even to the villages within a few miles, and ceased immediately on the dispersion of the multitude who had assembled at Hurdwar.

In 1787 the cholera prevailed at Vellore, Arcot, and Trincomallee, and has been described by Dr. Duffin, Dr. Davis, and Mr. Thompson. At these places it raged with great violence, and so rapid in its progress, that many were carried off in twelve hours. It prevailed here most in October and November. Nausea, frequent heats and chills, cold sweats, severe gripings and purgings, retchings to vomit, intense thirst, with spasms and a sinking of the pulse, were the characteristic symptoms of the disease at these places.

In 1790, the cholera was again very prevalent, says the Calcutta report, and very destructive in a detachment of Bengal troops marching through the North-

ern Circars, in the months of March, April, May and June of 1790. The disorder was characterized by precisely the same symptoms which mark the present epidemic. "It began with violent pain and spasm in the stomach and bowels, which were followed by purging, vomiting, and all the signs of extreme debility." In one division consisting of 1000 artillerists, the cholera appeared, and destroyed 700 of them in six days.

Dr. James Johnson, in his work on the diseases of tropical climates, alludes to the prevalence of this disease in the vicinity of Trincomallee, about the year 1804, and refers to Curtis's description of the same disease. The following is one of the cases he gives of the complaint.

"A seaman on waking after a debauch, repaired to the deck, and there again he fell asleep, during the chilly part of the night. 'About 4 o'clock in the morning he awoke with a shiver and left the deck, but was soon seized with frequent purging and griping, his stools consisting of mucus and slime. Nausea and retching succeeded; nothing being ejected but phlegm, and the contents of the stomach. His pulse was small, quick, and contracted; his skin dry, but not hot. About eight o'clock in the morning he began to feel spasms in different parts of his body, which soon attacked the abdominal muscles, and threw him into great pain. During these paroxysms, a cold clammy sweat would be occasionally forced out, especially in the face and breast. The extremities now became cold; his features shrunk; the stomach rejecting every thing which was offered either as medicine or drink. The abdomen and epigastrium

all this time were distended and tense, with incessant watery purging and painful tenesmus. By ten o'clock his pulse could scarcely be felt; his breathing was oppressed and laborious, his eyes sunk, and the whole countenance singularly expressive of internal agony and distress. The extremities were cold, shrivelled, and covered with clammy sweats. The violence of the spasms now began to relax; and by eleven o'clock, or seven hours from the attack, death released him from his sufferings.' This may serve as a specimen of the worst form of that dreadful disease, which has obtained the appellation of 'mort de chien,' or the 'death of a dog.'"

Several other writers allude to the prevalence of this disease in India previous to 1817, and although its ravages have not been so great as subsequent to that period, yet no doubt can exist in the mind of any one who examines the subject, of the fact that cholera has very frequently prevailed epidemically in India, previous to its appearance at Jessore. But as it did not attract much attention in Europe previous to its occurrence at this last place, we shall endeavor to be more minute and particular in describing its appearance in 1817, and its progress since that time.

HISTORY OF THE EPIDEMIC CHOLERA FROM 1817 TO 1832.

Dr. Robert Tytler, who practiced medicine at Jessore, a city situated a little less than one hundred miles northeast of Calcutta, was called, on the 19th of August, 1817, by a Hindoo physician, to visit one of his countrymen, a Hindoo, who, the preceding night,

had been attacked with violent pains in his bowels, accompanied with diarrhea and vomiting. Dr. Tytler found the man to be dying, and believed it to be a case of poisoning, and was about to report so to the authorities of the town, when he learned the next day, that in the same part of the Bazar,* ten other Hindoos had died with the same symptoms, and in another Bazar, seven others, with a like disease, which had attacked many persons in the street.

It was now no longer possible to mistake an epidemic influence, especially as the number of deaths increased rapidly. In 2 months from the invasion of the disease, it destroyed more than ten thousand of the inhabitants of Jessore.

Such is the origin of what has been called this new pestilence; and which, since 1817, has prevailed every year in India; has overrun all parts of it; and which has extended over most of the eastern continent; to New Holland, China, the isle of Bourbon, and to the centre of Europe; and finally has reached this western continent, and appears by its violence at Quebec and Montreal, not to have yet lost any of its malignancy.

The resemblance which exists between this disease and that long known in Europe as Cholera Morbus, induced the English physicians to give it the same name, and though there are some differences, yet it is very true that this Spasmodic Cholera of India, resembles more the common Cholera Morbus than any other disease yet discribed; and therefore

* Bazar, Bazaar, or Basar, a market place in the East, in the neighborhood of which are the coffee houses and places of resort among the orientals. Bishop Heber, speaking of those at Calcutta, says, "they are wretchedness itself."

the name has been well chosen. Indeed many are of the opinion that it is in no respect different, but is only the common Cholera, prevailing epidemically. Sydenham alludes to its prevalence in London, in 1676. He says, " at the close of the summer, the Cholera Morbus prevailed epidemically, and being rendered more severe by the extraordinary heat of the season, was accompanied with more violent and inveterate convulsions, than I had hitherto known ; for not only the abdomen, but all the muscles of the body, and especially those of the arms and legs, were affected with terrible spasms."

In India the disease has received various names. The Hindoo physicians call it Vishuchi, or Vishuchiki ; but the common people give it a name which signifies *vomiting and purging*. When it prevailed epidemically, and with great severity at Bagdad, in 1821, it was called by the natives, *Haouwa*, which signifies *tornado*.

PROGRESS OF THE CHOLERA IN 1817.

The first ravages of the Cholera at Jessore, were very considerable ; twenty to thirty people died of it each day. At first, the Hindoo population only were attacked ; but afterwards, the Europeans were seized with it, and died in great numbers. The evil, for a short time, was confined within the walls of Jessore, but afterwards it extended to the neighboring cities and villages. The first invaded by this epidemic were Nuddea and Kishnagur, both situated on a small branch of the Ganges. Afterwards, Chitta-

gong, towards the east, and Silhet, on the north, and Calcutta, towards the south-west, became the prey to this terrible disease.

Until September, 1817, the Cholera had not appeared as an epidemic at Calcutta; some Hindoos were occasionally attacked with it, but the disease rarely proved fatal, and for the ten years previous to 1817, not a single case had been treated at the general hospital for Europeans at Calcutta. But the disease appeared at Calcutta as a violent epidemic the first week in September. Few were seized in the beginning; but of those few scarcely one survived. Each successive week added strength to the malady and more extended influence to its operations. It has been calculated that 36,000 were attacked in the first three months. The proportion of men to women who were attacked, was as 4 to 1.

In the district of Dacca, between the Ganges and the Burrampooter rivers, the disease made great ravages in the first six months; of those attacked, more than half died. At Sylhet, a city which contained 19,000 inhabitants, 10,000 persons had the disease during the first five months of its prevalence. In the district of Nuddea, containing 1,300,000 inhabitants, 25,500 had the disease, and 16,500 died from it.

A great number of cities and military stations were successively invaded by the Cholera, in the course of the year. The principal were those of Balasore, Burrisaul, Burdwau, Rungpore, Malda, Baugulpore, Chuprah, Monghyr, Buxar and Ghuazeepore. Among many, the invasion was so sudden that the roads were covered with the dead and the dying, who had not time to regain their tents or houses. Men mounted on horses were seen to fall from them, unable to rise again.

The epidemic this year extended in almost every direction around Jessore, to the distance of 250 miles, and it has been supposed that at least 600,000 men died of Cholera in thirty two cities, during its prevalence in 1817.

The first week in November, it broke out in the grand army under the command of the Marquis of Hastings, which was composed of 10,000 English, and 80,000 natives, and who were encamped on the right bank of the Betoah, and concentrated at Jubelpore, Mendelloa, and Sangor. The first victims were very numerous, but on the fifth and sixth days, the mortality became so great that despair seized the most brave. To the usual noise and gayety of a camp, succeeded a mournful silence, or nothing was heard but the groans of the dying, and the lamentations of those that survived. The principal roads and fields around the camp, were strewed with the dead bodies of those who, by flight, had hoped to have escaped this terrible devastation. No expression can properly describe the spectacle of desolation which this army, recently so brilliant, now exhibited. In twelve days, 9,000 men had died, as was ascertained, and a still greater number had fled. The survivors, overwhelmed by so great a disaster, disregarded the voice of their chief, and sought only to save their lives, or stun themselves by debauchery. Happily, the Marquis of Hastings marched his army across the Betoah, and fixed his camp on dry and elevated ground, and very soon the disease subsided.

PROGRESS OF THE CHOLERA IN 1818.

In 1818, the epidemic cholera spread in every direction, and over a vast extent of country. It prevailed on the river Jumna, from its connection with the Ganges, to the distance of 200 leagues. Patna, Agra, Multra and Delhi, were visited by the disease. Patna, containing 250,000 inhabitants, of whom 1,539 died by cholera. At Sharunpore, 250 perished out of 30,000 people. Agra suffered severely. At Delhi, the victims were numerous. At Benares, 15,000 persons died in two months; and at Allahabad, 40 to 50 died in a day. In fine, there were but very few cities or villages in the space of 450 square miles, following the course upwards of the Ganges and the Jumna, that were not ravaged by the cholera in 1818. At Calcutta, 13,920 persons were attacked in the last three months of 1818, and the registers of deaths caused by cholera, among the Indians and Mussulmen population, show that above 5,000 perished.

From Bengal, the disease spread to the north, towards Nepaul, and to the east, towards the Birman Empire, on the west, to the coast of Malabar, and through the whole extent of the Coromandel coast in the south. Traversing the peninsula of India, the cholera penetrated, in the month of August, 1818, the village of Panwel, and the island of Bombay, where, in fourteen days, 537 persons were destroyed by it.

From Bombay, the epidemic extended itself towards the north, ravaged Surat, Poonah, Serror and Collapore. At Poonah, 30 to 40 persons died in a day; and at Serror, 200 Hindoos and 20 Europeans died in 24 hours. In the south, Calicut, Cochin, and

several other cities were successively attacked by the disease. The disease prevailed to an equal extent, in the interior of the peninsula. It appeared successively at Husscinabad, Aurengabad, Amenagar, Hydrabad, Seringapatam, Madura, and most of the towns even to Cape Comorin. By many it was supposed to have been brought into this part of India by a detachment of troops that was directed from Nagpor to Jaulnah and Aurengabad.

In the course of July, the disease appeared at Ponderpour, at the time when the celebration of a great festival had drawn a great number of people together; at this place, more than 350 died each day, so that in a short time 3,000 persons perished of the disease. In the month of September, the cholera appeared among the inhabitants of Bellary, and afterwards the troops at that place were attacked by it. In the month of November, it prevailed at Seringapatam, and at the same time at Mysore and Coimbatore. In this last place, containing 15,000 inhabitants, 70 to 80 died in a day.

The cholera prevailed during the first year on the Coromandel coast, and extended to Jaggrenah, and in 1818 it appeared at Masulipatam, and at Fort St. George, and Madras. In the months of January and February, a number of Hindoos had the disease at the fort, and in the course of the year, above three thousand Hindoos were attacked, of whom 664 died; and out of 11,000 Europeans, 1,087 had the cholera, of whom 232 died. In the month of June, Pondicherry was invaded by the epidemic, and at the same time it prevailed at Carnate and Bellary.

Towards the east, the epidemic cholera extended in 1818, to the Birman Empire, and to the King-

dom of Arracan ; and the same year it also prevailed in the peninsula of Malacca, though the extent of its ravages in that country is not known.

Its prevalence this year in the north was remarkable. It was noticed among the inhabitants on the high mountains which separate Hindostan from Napaul, and also in the vallies of Catmandou, Patun and Bhatgoun, the elevation of which, is more than 4000 feet above the level of the sea.

During the year 1818, its ravages were as great, or greater than they have ever been since, in the course of one year.

More than 140 cities or villages were visited by it, and it extended from the equator to the 28° of north latitude, and over an extent of 30 degrees of longitude.

PROGRESS OF THE CHOLERA IN 1819.

In 1819, the progress of the cholera was not so great as in the two preceding years.

It prevailed for a considerable portion of the year in Calcutta, but the number of deaths did not exceed 1459. In the Presidency of Bengal, a great number of cities in which the cholera prevailed the year before, were visited by it this year also. This was the case with Nagpore, a city situated in the centre of the peninsula, and in which a great number of people died with the cholera in the months of April and May.

Many of the military stations were attacked, but the disease raged less than in 1818.

The citadel of Jaragurth, built on an isolated rock,

at a height of 1000 feet above the plain, was visited by the epidemic, whilst the inhabitants of a city situated at the foot of the mountain entirely escaped.

The course of the Ganges and the Jumna were again visited by the disease. Many cities, as Morahabad, Kiurnaul, Bareilly, Almora and Saharunporte lost many inhabitants.

The high regions of Nepaul, even to Catmandou, were this year spared.

From Madras, the disease advanced towards the south; passed Trichinopoli; ravaged Areot, and prevailed at Cape Comorin. From here, it passed to Cochin, Calicut and Bombay.

On all this coast, a great number of towns which had escaped the preceding year, were now desolated by a frightful mortality. It has been calculated that 150,000 people died in the Presidency of Bombay, of the disease in 1819. Entire villages were depopulated, and the terror was so great that the crews of many vessels, loaded with cotton, deserted and fled in the night.

At Bombay, it was ascertained that from the month of April, 15,945 individuals were attacked by the disease, and the Medical Commission affirmed that this number was one quarter or one third below the true number. The progress of the cholera was very extensive on the southeast coast in 1819.

The kingdom of Arracan, the peninsula of Malacca, and the kingdom of Siam, were successively invaded. At Malacca, more than 400 persons perished in a few days. Bankok, the capital of Siam, lost more than 40,000 of its inhabitants by cholera.

As the people attributed this disease to the influence of an evil genius, which, under the form of a fish,

had sought refuge in the Gulf of Siam, the sovereign authority ordered the celebration of a great religious solemnity on the coast, in order to exorcise this evil being, but the collection at one place of a great mass of human beings, redoubled the fury of the disease. Eye witnesses stated that of this collection, 7000 died of cholera in a very short time.

Until about the commencement of 1819, the cholera had confined its ravages to the continent, but in the month of January, 1819, it appeared at Trincomalee, in the island of Ceylon. By many, it was supposed to have been imported there, by the vessel Leander, from Calcutta. After this, it appeared at Kandy, the capital city, built on the borders of an artificial lake, 1400 feet above the level of the sea, and surrounded by wooded hills and mountains. About the same time, the disease appeared in the island of Penang, situated in the straits of Malacca. Eight hundred inhabitants of the English colony of Charlestown died in the course of twenty-one days. The population of Charles-town was above one thousand, two thirds of whom were swept away by the invasion of the cholera in 1819.

The island of Sumatra was also devastated the same year by this epidemic. So violent was the disease in the capital, Acheen, that the king sought refuge at the mouth of the river, where he formed a camp. But the disease followed to this place, and destroyed sixty persons a day.

This year, the epidemic cholera made its appearance at a great distance from India, in Mauritius or isle of France, a distance of 3000 miles from the other places at which the epidemic raged. Its appearance

at this place has given rise to much discussion as to its importation.

It first appeared at Port Louis, the principal town in the Isle of France, the 16th of Nov. 1819. *Seventeen days* before this, the Topaze, a frigate of 46 guns from Ceylon, anchored in the harbor of Port Louis, after a very unhealthy voyage, during which, several men had died of cholera morbus.

These circumstances have been appealed to, as proof positive that this vessel brought the disease to the island; but it should be recollected that although the cholera did not prevail epidemically, or to much extent at Port Louis until after the arrival of the vessel, yet Dr. Kinnis states that several cases occurred during the month previous.*

At first, the disease was confined to Port Louis, and out of a population of 8000, destroyed fifty a day, for the first ten days. The patients consisted principally of the black population of the Mozambique caste. These are curly headed negroes; low in the scale of civilization; too unintelligent to learn trades, and generally employed as porters. They are an uninteresting quiet race, not given to excess, living chiefly on rice and Indian corn. The disease soon spread from the Port to the district of Pamplemouses; thence to the districts of Floeg, Mohebany, and to the Savannah, and is said to have destroyed from 10,000 to 20,000 persons in the island.

Thus we have seen, that during 1819, the cholera extended to many and very distant countries. The space over which it spread is about 40 degrees of latitude, and 50 of longitude.

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* See Edinburgh Medical and Surgical Journal for 1821.

The number of cities in which it prevailed during the year is about 64, or only one half as many as it ravaged in 1818.

PROGRESS OF THE CHOLERA IN 1820.

In 1820 the Presidency of Bengal was again a prey to cholera morbus. A great number of people belonging to the first ranks of society, were attacked by it. The disease appeared at the end of February. Sixty-eight persons perished in the last week of this month: 657 died in March: in April and May, the number of deaths increased, but in June the mortality of the disease diminished rapidly, but it did not entirely cease until September.

The course of the Ganges and that of the Jumna were also attacked in 1820.

Jessore, the cradle of the epidemic, was also visited this year by it, but with less intensity than the year preceding.

In the Presidency of Madras, a great number of people died in the course of the year. In many cities, such as Nagore, Negapatām, Madura, Palamcottah, and Tinnevelly, the epidemic commenced in 1819, and raged until the middle of 1821. At Madras, in 1820, there perished of the disease in the army, 69 Europeans, and 758 natives. In the other classes of the population, the number of deaths was not so great.

The environs of the city, however, suffered severely, especially the troops in the camps at Peddapoor and Bochuly. Arcot and cape Comorin were again invaded by the disease, which spread this year to Co-

chin, and penetrated into the interior, as far as Hydrabad and Nagpor.

In the month of April, it attacked Surate and its environs, afterwards it appeared at Bombay, where the greatest mortality prevailed, in the months of May and June.

The islands attacked by the cholera in the course of 1820, were Penang, which had already suffered in 1819, and also Ceylon, where it ravaged Candy and Columbo.

The island of Bourbon also experienced a slight attack of the disease. By many it was supposed to have been imported into this place from the isle of France, as it appeared in January, 1820, in the isle of Bourbon at the same time it prevailed at the isle of France.

The disease this year appeared in the Phillippine islands, and at Manilla in September, after the arrival of vessels from Bengal. The terror produced at Manilla was so great that it caused an insurrection, in which perished many Europeans, and a great number of the natives.

The inhabitants of the island of Sumatra were attacked this year by cholera; not only those who lived on the low grounds and banks of rivers, but those who resided on the high lands of the interior. The city of Bancoo alone escaped, though in the immediate neighborhood, and in free intercourse with places where the disease prevailed. This year the cholera prevailed at Siam and at Tonquin, and also extended to all Cochin China. It appeared at the same time at Canton and many other cities of China.

This year, though a less number of cities have been

attacked by cholera than in 1819, (42 instead of 64,) yet it appears that the morbific influence extended farther, and comprehended 60° of longitude, and 40° of latitude.

PROGRESS OF THE CHOLERA IN 1821.

In 1821, the cholera invaded countries that it had not before visited. The Presidency of Bengal was, however, as formerly, the principal seat of the disease. At Gorruckpore, the number of deaths was so great, that the Rajah and the most part of the inhabitants fled. The army encamped on the Nerbudda suffered severely from the disease, which also prevailed in the cities of Chittagong, Ghazepore, Balassore, Sangor, Dacca, and many others.

The malady reappeared at Calcutta, in the course of June. It appeared at Jaggrenah during the annual religious festival, which brought a great number of pilgrims together. The ravages of the cholera were so great as to hinder one of the principal ceremonies, that which consisted in drawing the *car of the idols* around the temple, so that this year no pilgrim was enabled to offer himself as a sacrifice by precipitating himself under the wheels of the car.

On the Coromandel coast, a great number of cities were visited by the epidemic in the course of 1821. The principal were Cudalore, Durwar, Salem and Madura. At Madras the Indian troops were severely visited. Pondicherry and Trichinopoli suffered very greatly. At St. Thome the missionary, Pierre Druillard, died of cholera, after having fulfilled the

duties of his pious ministry to many of those sick with the same disease.

The cholera also prevailed this year among the troops at Jaulnah, in the middle of the peninsula, and spread from there to the camp of Venkettagury and to Nagpore. The Presidency of Bombay was this year the seat of the disease, in its most mortal and malignant form. Salsette, Baroda, Poonah, Servor, and Surat, were the principal cities affected. In the capital, 235 persons died in less than one week. The disease prevailed most in May, but in November had not entirely disappeared.

Kishme, an island situated at the entrance of the Persian Gulf, was visited by the cholera this year. It has been said that the germs of the disease were brought here by a convoy of English troops. The disease extended itself along the gulf, visited Ormus, Mascate, and Bender Abouchir; extended also to the isle of Bariem, and finally reached Bassora, in which city it manifested extraordinary violence. Of 60,000 inhabitants, 15,000 to 18,000 died of cholera in eleven days. From Bassora, it was carried as has been supposed to Bagdad, by caravans and vessels on the river Tigris. At any rate it appeared at Bagdad soon after it raged at Bassora, and according to Dr. Meunier, one third of the population of Bagdad were destroyed by it. Inhabitants of the suburbs of the town, also became affected by the disease, and from here the disease spread to the surrounding country. A Persian army, which at this time menaced Bagdad, recoiled before this new enemy, but carried the disease with them into the centre of Persia. At the same time the disease spread from Bender Abouchir

to Shiraz, in which city the disease was as mortal as at Bassora. From the frequent communication between these places, it would seem as if the disease might have been transported by travellers from one place to the other, and many writers say this was actually the case; but it is impossible, at this time, to obtain all the facts respecting its progress in India and Persia, to enable us to determine the important question as to the contagiousness of the complaint. Besides, this can more easily, and more satisfactorily be determined, by an examination of its progress in Europe, and within a few years past.

At Shiraz the disease raged with great violence. The Prince Royal lost many persons belonging to his harem. Both his mother and son died of the disease, and it has been calculated that in 18 days, 6,000 people died of cholera, out of a population of 35,000.

On the eastern coast the progress of the disease was less extensive, and was chiefly confined to two islands in the Indian Archipelago, Borneo and Java.

In the island of Borneo, the Dutch garrison of Pontianah was nearly destroyed; the resident was the only person who was able to administer medicine. In the island of Java, Samarang was the first city invaded by the disease; afterwards it prevailed at Batavia, Sourabaya, Kandal and Japara. At Samarang, 900 persons perished in seven days. Batavia lost 17,000 inhabitants, and the entire island of Java 102,000.

Such was the progress of the cholera in the course of the year 1821. We have seen that it spread from places situated under the 40° of longitude and 35° of north latitude, even to Java, under the 110° of

longitude, and the 8° of south latitude; a space of 43° of latitude and 70° of longitude.

PROGRESS OF THE CHOLERA IN 1822.

The presidency of Calcutta suffered but little from the cholera during the course of this year. It did not prevail at Calcutta until the month of December, and then but few died of it; probably owing to the adoption of measures to secure the health of the city, which until now had not been attended to. The disease prevailed again, however, at Jessore, Chittagong, and Serampore, though with less violence than formerly.

The Coromandel coast was invaded by the disease at many points, even as far as Cape Comorin. At Madras, the troops suffered severely. A vessel anchored near the harbor, lost all her crew, by the cholera, excepting two sailors. The vessel William Fairlie, lost seven men in five days. "When we retired for the night," said one of the officers of this vessel, "we took leave of each other, certain that we should not all meet again."

The coast of Malabar, and the city of Bombay, were not attacked in the course of 1822. On the eastern coast, the ravages were less than in the two preceding years.

From Cochin China, where it had been very severe since 1820, it extended towards China, where it raged two years before. Canton, Pekin, and many other cities of China lost great numbers of their inhabitants. The Phillippine islands still continued to experience the ravages of this epidemic, but in a less

degree, as this year Manilla was the only place where the disease prevailed.

On the western coast, the progress was towards Europe. In Mesopotamia, the disease re-appeared in the spring, though it was arrested during the winter. Bagdad, Mosul, Merdine, and Diarbeker suffered successively. Many cities in Syria were infected by the epidemic in the course of the year. The cholera also progressed on the side of Persia. From Ispahan, where the disease reigned in 1821, it reached Kashan in July, 1822, and soon after, Khow, Casbin, and Kermandah. In the month of September, it appeared at Tauris, and extended immediately to Erzerum.

The Prince Royal of Persia having attacked the the Turkish army, saw, a few days after the victory, his army swept away by the epidemic. It was computed that 2,000 soldiers died in one march. When the army arrived at Tauris, 30 to 40 persons died each day. The total number of deaths was 4,800 in the 25 days that the disease prevailed. This number constituted about one twentieth of the population. In conclusion, the number of deaths from cholera, and the number of cities infected, were much less than in the preceding years. Its progress was also much less extensive, being confined to ten degrees of latitude,—in Persia, Syria, and Mesopotamia, and o about the same space in the Chinese Empire.

PROGRESS OF THE CHOLERA IN 1823.

In the Presidency of Bengal, only four cities were visited by cholera this year, Calcutta, Nagpore,

Kampti and Jaulnah, in each of which, the number of deaths was very inconsiderable. The Coromandel coast also suffered but little this year: Madras, Trichinopoli, Arcot and St. Thome were the principal cities where the disease prevailed. In the Presidency of Bombay, the capital alone suffered from the cholera, and here it prevailed in a very light degree.

In general, British India nearly escaped the cholera during the year 1823. It prevailed, to be sure, in various parts of the country, but very few died of it. But it was very different in the Birman Empire. There, its progress was extensive, and the mortality very great, notwithstanding the numerous and diverse preservatives extravagantly praised by the government. Neither the name of the *heir to the crown*, worn as an amulet around the neck, nor the detonations made to chase the evil demon from the country, were able to arrest the progress of the epidemic, or to lessen its mortality.

In China the ravages of the cholera were also great, in consequence of the numerous canals, and the immense population of the country. The Russian authorities urged the Mandarins to arrest the disease by adopting some preventive or preservative measures. But they were told in answer, that the malady would give more space in the world to those who survived it, and besides, that the cholera chose its victims from among the filthy and the intemperate, and that no person of courage, who lived with moderation and surrounded by cleanliness, would die of the disease. On this occasion, the Mandarins stated that the Emperor had said to his subjects, "Do not believe the disease is more powerful than yourselves; timid people are the only ones who die of it." And it was added that

after this the people took courage, and the disease left the country. But the vast provinces of China were not the less ravaged by the epidemic, which extended even to Kukuchoton, a Russian city north of Pekin, in the 40° of north latitude. Macao and Nankin also suffered very much from the disease.

The progress of the cholera was also considerable on the western coast. The north of Persia continued to be the seat of the epidemic in its most mortal form, and from here it penetrated into the Russian territory by two points, Gilan Suillau on one side, and Astrachan on the other. In this last city, 216 had the disease, 144 of whom died. The borders of the Mediterranean, and also those of the Caspian sea, were this year visited by the cholera. It prevailed at Lataquie in June, 1823, and afterwards at Antioch, Tortose, Tripoli and Luedie, though not with great severity. From here it spread to Damir in the neighborhood of Damascus. On the other side, it spread to the foot of mount Libanon, and threatened Palestine.

The most northerly point where the cholera appeared this year was Orenbourg, a city situated on the confines of Asia and Europe. At this city, numerous caravans arrived yearly, by two different ways. Those from Bucharia and China, and which traversed Chinese Tartary, arrived from the east, while those that brought merchandise from Hindostan, and traversed the territory of the Kirghises arrived from the south. By either of these ways the cholera might have been brought to Orenbourg, for the disease prevailed both at China and Hindostan. The first invasion of the disease at Orenbourg was not formidable, but few died of it, and it did not extend far into the surrounding provinces.

In the course of the year 1823 the cholera prevailed but little in those places where it had formerly raged, it extended however to the frontiers of Europe, to Astrachan and Orenbourg.

The appearance of the disease on the borders of the Mediterranean created great alarm, in consequence of the frequent communication which existed between Europe and the ports of Syria; but now, events have shown that such fears were not well founded, as the disease has not penetrated into Europe by maratime communications, but has passed by land from one country to another.

PROGRESS OF THE CHOLERA IN 1824.

But few countries were visited by the cholera in 1824. In British India it prevailed but very little, and only in a few cities. Calcutta lost a few hundred inhabitants by the epidemic in the course of the year. At Madras, the army suffered but little, while the vessels anchored near the fort lost great numbers of their crews.

The coast of Malabar, and the capital of the province were invaded at some points. But the ravages of the epidemic were very inconsiderable, though they attracted great attention by the rank of the victims of the disease, who belonged to the most wealthy and elevated classes in society.

On the eastern coast, the Birman empire and the northern provinces of China were the only countries infected by the disease in 1824.

The towns in the west, in Persia and Arabia, where the disease had prevailed with frightful mortal-

ity for three years past, this year were entirely exempted from the epidemic. Mesopotamia was also delivered this year from the complaint, which raged there with great severity the year preceding. In Syria, the city of Tiberiade was the only one where the cholera appeared, and here the cold of winter put an entire stop to it.

In conclusion, the march of the destroying epidemic which had menaced both Europe and Africa, seemed to be arrested in the year 1824.

PROGRESS OF THE CHOLERA IN 1825.

The Presidency of Calcutta again saw the cholera reappear and prevail with greater violence than in the course of the year 1824. More than 500 persons died in Calcutta, daily, in August and September.

At Jessore, the disease again appeared and destroyed more than thirty a day.

At Benares, more than 6000 Hindoos died of cholera in the course of the summer. Many other cities, such as Mirapore, Dinapore, Gasepore, Chunar, &c., were infected in the course of the autumn. The Coromandel coast was more fortunate than Calcutta, as the disease had not visited it for two years.

At Bombay, the return of the disease created great alarm. The inhabitants built hospitals for those sick with cholera; they set fire to immense masses of wood in the infected districts, and burnt large quantities of vinegar, tar and gun powder. The environs of Bombay also suffered from the disease, which extended to Surat on the north, and Belgaum and Colapore in the country of the Marattes. In Western

Asia, Arracan and the empire of the Birmans were the only places infected by the disease in 1825, and it is said that the north of China and Chinese Tartary suffered greatly from the disease in the course of this year.

PROGRESS OF THE CHOLERA IN 1826.

The Presidency of Calcutta suffered but little this year from the epidemic. At the city of Calcutta, the Hindoos perished in considerable numbers. Patna and Benares experienced the same calamity. In this last city, the disease destroyed one hundredth part of the population. The Coromandel coast was, as in 1825, completely preserved from the disease. On the coast of Malabar, only a small number of cities were infected, but when the disease did prevail, it was so mortal that indescribable terror seized the people, who fled at its approach.

In eastern Asia, the epidemic continued to progress towards the north—passed the great wall of China, and visited Kukuchoton, a Russian city, situated on the 42° of north latitude. From there, it penetrated, perhaps by the aid of caravans, from Kiachta, even to the centre of Asiatic Russia.

Western Asia was this year completely exempted from this epidemic which had ravaged it for five years. In conclusion, there has been no year since the commencement of the disease in 1817, in which so few cities were infected. According to M. Moureau de Jonne's there were only five ; but this number is probably below the truth. It is certain, nevertheless, that the diminution of this malady gave birth to the

hope that its ravages, which, for ten years, had extended over a considerable portion of the world, were now about to cease.

PROGRESS OF THE CHOLERA IN 1827.

From the month of January, the city of Calcutta was infected by the cholera. First, the garrison was attacked, and afterwards the Hindoo population, which sickened in great numbers. The animals also experienced the epidemic influence, and to such a degree, that they were killed in great numbers. The prolongation of the epidemic gave rise to various and singular conjectures and opinions. The Europeans attributed it to the heat of the sun and the coldness of the nights; whilst the Hindoos considered it to arise from the anger of the Divinity or God of the Cemeteries, in consequence of the cessation of human sacrifices.

At Palcal, a Hindoo woman resolved to burn herself on the body of her husband, who had died of cholera, but the Rajah refused to authorize such a procedure. The widow, however, was urgent in her request, and declared that the cholera would cease in five days if she might be permitted thus to sacrifice herself. The Rajah yielded to this assurance, and permitted the sacrifice; but the disease was not seen to lessen.

Many cities in the Presidency of Bengal and of Hindostan, were invaded by the cholera, in the course of the year, the principal of which, were Jessore, Jaypour, Jubulpore, Rewa, Sangor, &c. The disease prevailed also at some places on the Coro-,

mandel coast; at Madras, Jaulnah, Hyderabad and Husserabad; but every where, it was, this year, less malignant than it had been during the preceding years. This was particularly the case at Bombay, where only a very few died of the disease in 1827.

At the north, the cholera appeared at different places. On one side, it reached the high grounds in the neighborhood of the Himaleh mountains, and on the other it opened to itself a new route towards Europe, from the centre of Asia. It passed from Lahore to Cashgar, and to Caboul, where it prevailed several months. From this last city, which is the great emporium of the merchandize of India, it was supposed to have been transported with the caravans, to the borders of the Caspian sea. By this route, Persia on the west, and Russia on the north, appeared to have received the disease in 1828 and 1829. At the east, we see the disease extend itself further into Chinese Tartary, and into Russia in Asia, where it had already prevailed in 1826.

PROGRESS OF THE CHOLERA IN 1828.

As in the four preceding years, the ravages of the cholera in 1828 were not great, and were confined almost exclusively to British India. In the neighborhood of Calcutta, more died of the disease than formerly; several villages were entirely depopulated. The mountainous districts of Kemaon, Almorah, Cawnpore and Chittagong, were successively affected with the cholera.

At Madras, the disease did not appear before the month of August; but then it destroyed a great num-

ber of Europeans. All the coast was ravaged by the disease even to Trichinopoli, where it prevailed until the end of December. On the coast of Malabar, Bombay was nearly the only city where the disease prevailed in 1828; but here the victims belonged to all classes of society; the rich and the poor, officers and soldiers, Europeans and Hindoos, were alike affected and destroyed by the malady.

This year, the cholera continued its march towards the north. From Lahore, where it destroyed 30,000 inhabitants in 1827, it extended to the neighboring towns, in the autumn of 1828. But the cold very soon mitigated its violence, and lessened its ravages.

PROGRESS OF THE CHOLERA IN 1829.

The disease did not, this year, appear in the Presidency of Bengal. Madras, Madura, Verdaputty and Royapettah, were nearly the only cities visited by the cholera on the Coromandel coast, in the course of the year 1829. At Bombay, there were a few cases, but the disease exibited nothing remarkable.

The cholera appeared anew in Persia in 1829. The precautions taken to prevent the disease being imported into Teheran, in 1822, and which were supposed to have prevented its appearance there at that time, were said to have been neglected in 1829, and the disease appeared there towards the end of October. It was supposed to have been brought there by communication with Caboul. The severity of the cold season, however, prevented the disease prevail-

with great violence, and after a few weeks it entirely disappeared.

During this year, the cholera, as if impatient of the limits within which it had hitherto been confined, crossed the Ural mountains, which separate Asia from Europe, and appeared in the city of Orenbourg, lying in the 51° of north latitude, and 72° of east longitude. This city is situated upon the river Ural, between two chains of the Ural mountains, in a spacious and open valley, extending in a direction from northeast to southwest, and contains 11,000 inhabitants, of which number, six thousand are soldiers. The first case was that of a soldier in the garrison at Orenbourg. He was attacked on the morning of the 26th of August, and died in 12 hours. One week after, a woman died of suspicious symptoms, and after another week, on the 8th of September, another suspicious and fatal case occurred. Neither of these persons had any communication with any infected place, and no trace whatever could be found of the way in which the cholera arrived at Orenbourg. The next day, two other cases occurred, and on the 10th of September, two more, after which, the disease spread rapidly, and became prevalent. Between this time and the 20th of November, when the disease entirely ceased, 1,100 cases occurred, of which 200 died. No other place in the Orenbourg government was visited by the disease, until the 23d of September, when it broke out at Rasufina, 60 miles west of Orenbourg; soon it appeared at other places, and by the middle of November, it had spread over a district of country 200 miles square; but by the 23d of February, 1830, the disease was every where extinct in the Orenbourg government.

PROGRESS OF THE CHOLERA IN 1830.

This year the cholera spread over various provinces around the Caspian sea. It was noticed at several places in the Persian province of Ghilan. It prevailed all along the shores of the Caspian,—at Sherran, Maranderen, Reschd and Baku. In the town of Taurus, the mortality was not less than 5,000. It appeared at Tiflis, the capital of Georgia, on the 27th of July, and in ten days attacked 579 persons, of whom 237 died. The city of Tiflis was nearly depopulated by death and flight, which reduced the number of the inhabitants from 30,000 to 8,000. In this city, the rites of religion were interposed to stay the calamity.

On the 19th of July, the disease reached Astrachan, where it had prevailed several years before. Astrachan is a large town, situated on an island in the principal mouth of the Volga, about thirty miles from the northern shore of the Caspian. The town contains, according to Malte-Brun, from 40 to 70,000 inhabitants. In ten days after the disease first appeared, 1,229 persons were attacked, of whom 433 died.

From Astrachan it spread along the Volga river, and appeared at Taritsin, 220 miles above Astrachan, by the 4th of August, and at Saraton, 200 miles further north, on the 6th of the same month. After this, it extended to the government of Kien, 500 miles west of the Volga. On the 27th of August, it appeared at Samarov, a town on the Volga, 200 miles north east of Saraton ; and by the last of the month, it reached Nischnei Novgorod. On the 9th of September, it broke out at Kasan, two hundred miles down the Volga ; and about the same time. at Kos-

troma, two hundred miles up the river; and on the 15th of September, it arrived at Moscow, about two months and a half after its second appearance at Astrachan.

The occurrence of the disease in Moscow occasioned great alarm; 50,000 persons are said to have fled the city in a few days. More than 200 cases were reported in the first twelve days, and at the height of the epidemic, 244 persons were attacked in one day. The consternation was great throughout the Russian Empire. The Emperor liberally offered a reward of 25,000 rubles, (about $5,000,) for the best dissertation on the nature, causes, prevention, cure, &c. of cholera. A council of health was formed at Moscow, composed of physicians from Paris, Berlin, Gottingen, and other places, who, after having devoted themselves to the study of the epidemic, reported, that at the end of three months, more than 8,000 cases had come under their observation, and that of this number, more than one half had died. The disease had, however, nearly subsided in Moscow at the close of the year 1830.

PROGRESS OF THE CHOLERA IN 1831.

Early in the spring of 1831, the cholera re-appeared in Europe. It was seen in the north, as far as Archangel, and in the west, at the Baltic sea. Spreading to the south and west, it reached Warsaw about the middle of April. Here it attacked all ranks and ages, though most prevalent among the lower orders. In July, its ravages were very great, not only in Warsaw, but in almost every village of

unfortunate Poland. In May, it broke out in Riga, where it raged until late in July. It also prevailed at the same time at Polangen, Dantzic, and other ports on the Baltic.

On the 26th of June, the cholera appeared in the imperial city of St. Petersburg. The Czar became terrified, and with his court retired from the city, and surrounded himself with a *cordon militaire*, allowing no approach from without. Thousands of the inhabitants of St. Petersburg fled the city to places where the disease had not prevailed. At one period, from five to six hundred new cases occurred daily, but towards the end of July the epidemic gradually subsided, and by the 15th of August the disease had entirely ceased, and the fugitives returned to their homes.

About the same time that the disease prevailed at St. Petersburg, it also appeared at Archangel, on the Dwina, near the White sea, and at Odessa on the Black sea. It broke out at Mecca, about the first of May, 1831, at the time when innumerable pilgrims from every part of the empire were collected there to visit the holy places. It is said that of 50,000 pilgrims to the shrine of Mecca in 1831, about 20,000 perished of the cholera.

The disease appeared at Berlin in the course of this year. It was officially announced as prevailing there the first of September, but a few cases had been noticed during the month previous. At first, the disease at Berlin was very violent, but after a few weeks it assumed a much less malignant character, and by the end of the year had almost entirely disappeared. The disease prevailed at Berlin about three months and a half. The greatest number of new cases oc-

curred about the third week after the disease broke out, and the greatest number of deaths the following week. From the 1st of September, to the middle of December, the number of cases which had occurred at Berlin amounted to 2,230, and the number of deaths to 1,407.

The disease prevailed this year to a great extent in Hungary, and the numerous communications which existed between Hungary and Austria, by means of the Danube, created great fears in Vienna, the capital of Austria. The city was surrounded by a *double cordon*, but notwithstanding this precaution, the disease appeared the 16th of August, though the authorities did not acknowledge the disease to exist in Vienna until the 15th of September. At this time it raged with great violence. During the first week 764 cases occurred, and 303 deaths; after this, the disease diminished. The disease prevailed at Vienna about three months, during which period 4046 cases were noticed, and 1936 died of the disease. The cholera at Vienna destroyed more of the nobility and people belonging to the upper classes of society than it ever had at any other place: and it was likewise more fatal here, than it had ever before been noticed, to the physicians and other attendants on the sick.

The cholera also prevailed this year at Constantinople. The Turkish government did not however establish any quarantines, but distributed gratuitously, small pamphlets throughout the empire, giving a history of the disease, the means of guarding against it, and the best treatment to be employed. Its ravages at Constantinople were not very great, but it prevailed with great severity at Smyrna.

The cholera first appeared at Hamburgh on the 11th of October, though not with great severity, as out of a population of 100,000, only 874 had the disease, and 455 died.

The 26th of October, the Board of Health of Sunderland in England, officially announced that the cholera existed there. A few cases of the same disease had been noticed in August previous, but it did not prevail epidemically until the last of October.

All attempts to prove that the disease was imported into Sunderland and England, have as yet failed, and the opinion that it was not imported at all, has become very general, not only at Sunderland, but throughout England, and especially among the members of the medical profession.

In a few weeks after the first appearance of the cholera at Sunderland, it broke out at New Castle, Gateshead, and numerous places in that vicinity, and the 17th of December, it first appeared in Scotland, at Haddington, a town situated on the river Tyne, distant about 17 miles from Edinburgh, and 100 from New Castle.

PROGRESS OF THE CHOLERA IN 1832.

The progress of the cholera since the commencement of the present year, has been greater in extent than during any previous year, for not only has it spread to most of the great towns in Europe, but the mighty epidemic has now reached this western continent; and this country, which has until the present year escaped the ravages of a general pestilence, is at present overshadowed by the angel of death.

The cholera appeared at Edinburgh, the 27th of January, 1832, but its ravages in that city were not great. It also appeared about the same time at various places in the neighborhood of Edinburgh and Glasgow, and early in the year it reached London, the largest city ever visited by pestilence; but very unexpectedly its ravages in this modern Babylon were very inconsiderable. It appeared for the first at Paris, the 24th of March, and in this splendid city it prevailed with great severity. It also appeared in many other towns in France. Soon after this, it broke out in Dublin, and other towns in Ireland, and it now appears to be prevailing, though in a mitigated form, in numerous places in England, Ireland and France.*

The first appearance of cholera on this continent, was at Quebec, where it broke out as an epidemic of great malignity, the 8th of June. Less than one week after this, it appeared at Montreal, where it has prevailed with uncommon violence.

The last week in June, the disease appeared at New York, and about the same time at Albany, but as the facts connected with the first appearance of the cholera in this country, and its subsequent progress, are imperfectly known at present, we refer the reader for further details, to the appendix to this work.†

* For further details respecting the recent progress of the cholera in Europe, see Appendix, note A.

† See Appendix, note B.

HISTORY OF THE SYMPTOMS OF CHOLERA.

Having brought down the history of the epidemic cholera to the present time ; having traced its ravages year after year, from 1817 to 1832 ; having followed it from India to Europe, and from Europe to North America, we shall now proceed to describe the symptoms of the disease as they have been witnessed in the different countries where it has prevailed.

The symptoms of this disease have been nearly the same in all countries. In all countries, some patients have experienced premonitory symptoms for several hours or days, such as diarrhea, nausea, and slight vomiting ; and in all countries, some have been prostrated at once by the disease, as if by a blow ; such become suddenly cold, the pulse ceases, and they expire in a short time.

In all countries, the following have been among the most prominent and essential symptoms of the disease. Immediate sinking of the circulation, coldness of the skin, tongue, &c., vomiting, purging and *spasms*, and a livid or blue or blackish color of the lips and surface of the body. The skin of the hands and feet becomes corrugated, and assumes a dark color, as if these members had been soaked for a long time in a pale blue dye. Generally, the patients manifest great desire for cold water to drink, and even when the tongue and mouth are moist and cold. Such were the symptoms of the cholera in India, in Russia, in England and Canada, as they have been described by those who have witnessed much of the disease at those places. Such are the symptoms which I have

just witnessed at New York, among those affected by the disease. Indeed, many of the descriptions of the disease as it appeared in India, would be very accurate and just descriptions of the disease as it now prevails in this country.

The following history of the symptoms of the cholera, as they were first noticed in India, was drawn up by the Bengal Medical Board, and was considered so accurate, that the Bombay Medical Board thought proper to adopt it, and embody it in their report:

"The attack was generally ushered in by sense of weakness, trembling, giddiness, nausea, violent retching, vomiting and purging of a watery, starchy, whey-colored, or greenish fluid. These symptoms were accompanied, or quickly followed by severe cramps; generally beginning in the fingers and toes, and thence extending to the wrists and fore-arms, calves of the legs, thighs, abdomen, and lower part of the thorax. These were soon succeeded by pain, constriction, and oppression of the stomach and pericardium; great sense of internal heat; inordinate thirst, and incessant calls for cold water, which was no sooner swallowed than rejected, together with a quantity of phlegm, or whitish fluid, like seethings of oatmeal. The action of the heart and arteries now nearly ceased; the pulse either became altogether imperceptible at the wrists and temples, or so weak as to give to the finger only an indistinct feeling of fluttering. The respiration was laborious and hurried; sometimes with long and frequently broken inspirations. The skin grew cold, clammy, covered with large drops of sweat, dank and disagreeable to the feel, and discolored, of a bluish, purple, or livid hue. There was great and sudden prostration of strength; anguish

and agitation. The countenance became collapsed; the eyes suffused, fixed, and glassy, or heavy and dull; sunk in their sockets, and surrounded by dark circles; the cheeks and lips livid and bloodless; and the whole surface of the body nearly devoid of feeling. In feeble habits, where the attack was exceedingly violent, and unresisted by medicine, the scene was soon closed. The circulation and animal heat never returned; the vomiting and purging still continued, with thirst and restlessness; the patient became delirious or insensible, with his eyes fixed in a vacant stare, and sunk down in the bed; the spasms increased, generally within four or five hours.

"The disease sometimes at once, and as if it were momentarily, seized persons in perfect health; at other times, those who had been debilitated by previous bodily ailment, and individuals in the latter predicament, generally sunk under the attack. Sometimes the stomach and bowels were disordered for some days before the attack; which would then come on in full force, and speedily reduce the patient to extremities.

"Such was the general appearance of the disease where it cut off the patient in its earlier stages. The primary symptoms, however, in many cases, admitted of considerable variety. Sometimes, the sickness and looseness were preceded by spasms. Sometimes, the patient sunk at once, after passing off a small quantity of colorless fluid by vomiting and stool. The matter vomited in the early stages was, in most cases, colorless, or milky; sometimes it was green. In like manner, the dejections were usually watery and muddy; sometimes red and bloody; and in few cases, they consisted of a greenish pulp, like half digested

vegetables. In no instance was feculent matter passed in the commencement of the disease. The cramps usually began in the extremities, and thence gradually crept to the trunk; sometimes they were simultaneous in both; and sometimes the order of succession was reversed; the abdomen being first affected, then the hands and feet. These spasms hardly amounted to general convulsion. They seemed rather affections of individual muscles, and of particular sets of fibres of those muscles; causing thrilling and quivering in the affected parts, like the flesh of crimped salmon; and firmly stiffening and contorting the toes and fingers. The patient always complained of pain across the belly; which was generally painful to the touch, and sometimes hard and drawn back towards the spine. The burning sensation in the stomach and bowels was always present, and at times extended along the cardia and œsophagus to the throat. The powers of voluntary motion were in every instance impaired, and the mind obscured. The patient staggered like a drunken man; or fell down like a helpless child. Headach, over one or both eyes, sometimes, but rarely occurred. The pulse, when to be felt, was generally regular, and extremely feeble, sometimes soft, not very quick; usually ranging from 80 to 100. In a few instances, it rose to 140 or 150, shortly before death. Then it was distinct, small, feeble, and irregular. Sometimes very rapid, then slow for one or two beats. The mouth was hot and dry; the tongue parched, and deeply furred, white, yellow, red, or brown. The urine at first generally limpid, and freely passed; sometimes scanty, with such difficulty as almost to amount to stranguary; and sometimes hardly secreted in any quantity,

as if the kidneys had ceased to perform their office. In a few cases, the hands were tremulous. In others, the patient declared himself free from pain and uneasiness ; when want of pulse, cold skin, and anxiety of features, portended speedy death. The cramp was invariably increased upon moving.

" Where the strength of the patient's constitution, or the curative means administered, were, although inadequate wholly to subdue the disease, sufficient to resist the violence of its onset ; nature made various efforts to rally ; and held out strong, but fallacious promises of returning health. In such cases, the heat was sometimes wholly, at others, partially restored ; the chest and abdomen in the latter case becoming warm, whilst the limbs kept deadly cold. The pulse would return ; grow moderate and full ; the vomiting and cramps disappear ; the nausea diminish ; and the stools become green, pitchy, and even feculent, and with all these favorable appearances, the patient would suddenly relapse ; chills, hiccup, want of sleep, and anxiety would arise ; the vomiting, oppression, and insensibility return, and in a few hours terminate in death.

" When the disorder ran its full course, the following appearances presented themselves :—What may be termed the cold stage, or the state of collapse, usually lasted from 24 to 48 hours, and was seldom of more than three complete days' duration. Throughout the first 24 hours, nearly all the symptoms of deadly oppression, the cold skin, feeble pulse, vomiting and purging, cramps, thirst, and anguish, continued undiminished. When the system showed symptoms of revival ; the vital powers began to rally ; the circulation and heat to be restored ; and the spasms

and sickness to be considerably diminished. The warmth gradually returned; the pulse rose in strength and fulness, and then became sharp, and sometimes hard. The tongue grew more deeply furred; the thirst continued, with less nausea. The stools were no longer like water; they became first brown and watery; then dark, black, and pitchy; and the bowels, during many days, continued to discharge immense loads of vitiated bile, until, with returning health, the secretions of the liver and other viscera gradually put on a natural appearance. The fever which invariably attended this second stage of the disease, may be considered to have been rather the result of nature's effort to recover herself from the rude shock which she had sustained; than as forming any integrant and necessary part of the disorder itself. It partook much of the nature of the common bilious attacks prevalent in these latitudes. There was the hot, dry skin; foul, deeply furred, dry tongue; parched mouth; sick stomach; depraved secretions, and quick variable pulse; sometimes with stupor, delirium, and other marked affections of the brain. When the disorder proved fatal, after reaching this stage, the tongue, from being cream-colored, grew brown, and sometimes dark, hard, and more deeply furred; the teeth and lips were covered with sordes; the state of the skin varied, chills alternating with flushes of heat; the pulse became weak and tremulous; catching of the breath; great restlessness, and deep moaning succeeded: and the patient soon sunk, insensible, under the debilitating effects of frequent, dark, pitchy, alvine discharges."

The following account of the invasion of the disease, and its symptoms, resemble very much the fore-

going, and are equally interesting. It is taken from the Report of the Madras Medical Board, drawn up by order of the Government, by Wm. Scott, surgeon, and secretary to the Board, and was published at Madras in 1824. The accompanying remarks are from the Edinburgh Medical and Surgical Journal, for 1825.

"The invasion of the cholera generally takes place in the night, or towards morning. The patient is sick at stomach; he vomits its contents, and his bowels are at the same time evacuated. This evacuation is of a nature quite peculiar to the disease; the entire intestinal tube seems to be at once emptied of its fæcal or solid matters; and an indescribable, but most subduing feeling of exhaustion, sinking, and emptiness is produced. Faintness supervenes, the skin becomes cold, and there is frequently giddiness, and ringing in the ears. The powers of locomotion are generally soon arrested; spasmodic contractions, or twitchings of the muscles of the fingers and toes are felt; and these affections gradually extend along the limbs, to the trunk of the body. They partake both of the clonic and tonic spasm, but the clonic form chiefly prevails. The pulse, from the first, is small, weak, and accelerated; and, after a certain interval, but especially on the accession of spasms, or of severe vomiting, it sinks suddenly, so as to be speedily lost in all the external parts. The skin, which, from the commencement of the disease, is below the natural temperature, becomes colder and colder. It is very rarely dry; generally covered with a profuse cold sweat, or with a clammy moisture. In Europeans, it often partially assumes a livid hue; the whole surface appears collapsed, the lips become

blue, the nails present a similar tint; and the skin of the feet and hands become much corrugated, and exhibits a sodden appearance. In this state the skin is insensible, even to the action of chemical agents; yet the patient generally complains of oppressive heat on the surface, and wishes to throw off the bed clothes. The eyes sink in their orbits, which are surrounded by a livid circle; the cornæ become flaccid, the conjunctiva is frequently suffused with blood; the features of the face collapse, and the whole countenance assumes a cadaverous aspect, strikingly characteristic of the disease. There is almost always urgent thirst, and desire for cold drinks, although the mouth be not usually parched. The tongue is moist, whitish, and cold. A distressing sense of pain and of burning heat at the epigastrium are common. Little or no urine, bile, or saliva, is secreted. The voice becomes feeble, hollow, and unnatural. The respiration is oppressed, generally slow, and the breath is deficient in heat.

"During the progress of these symptoms, the alimentary canal is very variously affected. After the first discharges by vomiting and purging, however severe these symptoms may be, the matter evacuated is always watery, and in a great proportion of cases it is colorless, inodorous, and often homogeneous. In some, it is turbid, resembling muddy water; in others, it is of a yellowish or greenish hue. A very common appearance is that, which has been emphatically called the "conjee stools," an appearance produced by numerous mucous flakes floating in the watery or serous part of the evacuation. The discharges from the stomach, and those from the bowels, do not appear to differ, except in the former being mixed with

the *ingesta*. Neither the vomiting nor the purging are symptoms of long continuance. They are either obviated by art, or the body becomes unable to perform these violent actions; and they, together with the spasms, generally disappear a considerable time before death. If blood be drawn, it is always dark, or almost black, very thick, ropy, and generally of slow and difficult effusion. Towards the close of the attack, jactation comes on, with evident internal anxiety and distress: and death takes place, often in ten, or twelve, generally within eighteen or twenty, hours from the commencement of the attack.

"During all this mortal struggle and commotion in the body, the mind remains clear, and its functions undisturbed, almost to the last moment of existence. The patient, though sunk and overwhelmed, listless, averse to speak, and impatient of disturbance, still retains the power of thinking, and of expressing his thoughts, as long as his organs are obedient to his will. Such is the most ordinary course of cholera asphyxia, when its tendency to death is not checked by art.

"A favorable issue is denoted by a rising of the pulse, a return of heat to the surface, inclination to natural sleep, and a diminution or cessation of vomiting, purging, and spasms; these indications being succeeded, after an interval, by the re-appearance of fœcal matter in the stools, of bile, of urine, and of saliva." pp. xx. xxi.

The symptoms or phenomena of cholera, however, are liable to variation. In some, vomiting is slight, or soon ceases, or is altogether absent; and the substances ejected may vary, being sometimes bilious, in other instances, thin watery fluid. Purging is more constant, and is rarely altogether absent; but the

matters discharged are liable to extreme variety. After the first emptying of the bowels, they have been observed to be greenish, or yellowish, turbid, frothy like yeast, and sometimes bloody, or even pure bile. In some cases they are inodorous, in others, they have a rank fleshy smell. But by far the most common is that of pure serum, so thin and colorless as not to stain the patient's linen; next is the *conjee-like* fluid, the mucus, however, being always so thoroughly mixed with serum as to give the whole the appearance of milk; and in cases which proved to be mild, the matters discharged resembled *soojee* in color and consistence. The quantity of clear watery fluid discharged is sometimes very great; and if it were uniform, the reporter remarks, it would readily explain the weakness, thirst, thickness of the blood, and other symptoms; but it is unquestionable, that the most fatal and rapid cases are by no means those which are distinguished by excessive discharges. The dejections sometimes take place without effort or uneasiness, at others they are discharged with great force, in general, simultaneously, with vomiting, spasm, and stoppage of the pulse,—seldom attended with much griping or tenesmus, though the calls are sudden and irresistible. Pain of the belly, felt on pressure, is only occasionally remarked.

Of the phenomena referred to spasms, we find the following account:—

"In the low, and most dangerous, form of cholera, whether in European or native cases, spasm is generally wanting, or is present in a very slight degree. The muscles most commonly affected are those of the toes and feet, and calves of the leg; next to them, the corresponding muscles of the superior extremities;

then those of the thighs and arms ; and lastly, those of the trunk, producing various distressing sensations to the patient. Amongst these, hiccup is not unfrequent, but it has been observed that this symptom, in cholera, is not at all indicative of danger. The muscles of the eye-balls have not been observed to be affected with spasm, unless the sinking of these organs in their orbits may be considered to be an effect of it. The reports make frequent mention of a remarkable permanent contraction of the muscles of the abdomen, by which the belly is drawn towards the spine. The spasms attending cholera are of a mixed nature, not strictly clonic ; the relaxations being less prompt and frequent than in epilepsy or convulsion, and seldom durable as in tetanus. The contractions of the muscles are invariably attended with pain, and some medical officers have observed, that a degree of spasmodic stiffness has continued for several days afterwards. It has also been remarked, that spasmodic twitchings of the muscles have taken place after death, and have continued for a considerable time. In one case, where a man had been paralytic in his limbs, with a total numbness of them, they were severly affected with spasms, and became exquisitely sensible. It was pretty evident, that there either has been an inaccuracy in the description of spasm occurring in cases of cholera, or a sensation differing from that of spasm has been confounded with it ; for, by the descriptions, we would be led to suppose that the spasms begin, and are felt, *in* the toes and fingers, which cannot be the case. As the extreme muscles, however, are generally first seized with spasm, it is probable that the small fleshy bundles in the palms of the hands and soles of the feet,

are affected; but there seems reason farther to conclude, that pain *is* really felt *in* the fingers and toes, and that it is referable to a sort of nervous twinge or tic doloureux in those parts, distinct from spasm, which is not uncommon in other disordered states of the digestive organs."—*Report*, pp. xxiv. xxv.

The following observations on the assemblage of phenomena, to which the East Indian practitioners give the name of *Collapse*, are very interesting.

"Of all the symptoms of Cholera, none is so invariably present, none indeed so truly essential and diagnostic, as the immediate sinking of the circulation. It must nevertheless be admitted, that, where instant remedial measures have been successfully practised, this symptom may not have developed itself; and that there are even cases where an excited vascular action has been observed to accompany the first movements of the system in cholera. Some intelligent practitioners have entertained doubts whether such cases belong indeed to this disease; and there seems reason to imagine that those inflammatory affections with spasm, known in this country, and alluded to in several reports, may, in some instances, have been mistaken for it. It is farther to be remembered, that these are precisely the cases which yield most certainly and readily to our remedial means: and it consequently follows, that a medical man can seldom have the opportunity of observing whether or not this form of cholera will degenerate into the low stage. There is, however, direct evidence in support of the fact, that they have so degenerated and gone on to a fatal termination. In the case of soldiers too, in whom such symptoms have chiefly appeared, we must make some account of the quantity of spirits

usually drank by them at the commencement of the disease, producing an effect on the circulation. The period at which a marked diminution of vascular action takes place, is somewhat various. The pulse sometimes keeps up tolerably for several hours, though very rarely. It more generally becomes small and accelerated at an early stage; and, on the accession of spasm, or vomiting, suddenly ceases to be distinguishable in the extremities. The length of time during which a patient will sometimes live in a pulseless state, is extraordinary. Dr. Kellett relates a case, where the pulse was gone within three hours from the attack; yet the man lived in that state from the 3d Oct. at 4 P. M., to the 6th at 2 P. M. On the cessation of the spasm or vomiting, and sometimes, apparently, from the exhibition of remedies, the pulse will return to the extremities for a short time, and again it will cease. The superficial veins and arteries are not always collapsed, even when the pulse has ceased. If these vessels be opened in this condition, the contained blood flows out; their walls then collapse, and no more blood can be extracted. There is no authenticated fatal instance of cholera on record, where the circulation has not been arrested, in the extremities at least, long before death took place." *Report*, p. xxv.

The reporter proceeds to describe, in a minute, but instructive manner, the various forms assumed by such symptoms as thirst, sense of heat in the epigastrium, and internal burning in general; the temperature, shrinking and insensibility of the skin to its ordinary irritants; the shrinking of the countenance; the changes which respiration undergoes, especially in becoming much slower, less frequent, and more laborious than during health; the occurrence of the

state termed *jactitation;* the comparative clearness and integrity of the intellectual faculties; the state of the urine and the state of the blood. Of his observations on each of these, we can make room only for those relating to the state of the skin and that of the blood, which form features of the morbid process of cholera so characteristic, that they deserve to be generally known.

"The state of the skin in cholera is, in general, what we might expect to find it in patients laboring under such affections of the alimentary canal, and with the subdued circulation which takes place in that disease. It is cold, generally clammy, and often covered with profuse cold sweats. Nevertheless, varieties occur in this, as in the other symptoms of cholera. The skin is sometimes observed to be dry, though cold; and sometimes natural, nay, in some rare instances, of preternatural warmth. An increase of temperature has been repeatedly observed to take place just before death: but the development of heat appears to be confined then to the trunk and head; and, in almost all cases, this *partial* development of heat is found to be a fatal symptom. It is entirely unconnected with any restoration of the energy of the arterial system, or any improvement in the function of respiration. The heat, in such instances, has been observed to continue considerable, for some hours after death.

"The sensation imparted by touching the skin of a person ill with cholera is very peculiar, and reminds one of that imparted by a dead body. The skin, when much collapsed, becomes insensible, even to the action of chemical agents; and hence the usual vesicatories fail in producing any effect. The appli-

cation of mineral acids, and of boiling water, in this condition of the skin, produces little or no effect, and some patients are said not to have been sensible of the operation.

"The action of mineral acids on the skin, is not, however, vesication, but rather that of a cautery, the cuticle and the extremities of the subjacent vessels appearing to be destroyed by them. It has been said, that vesication could not be produced in some stages of cholera, because the production of serum was, in common with the glandular secretions, arrested; but when we reflect on the readiness with which serous fluids are poured out in that disease, we shall be rather disposed to refer the failure in the action of vesicatories, even of hot water, to the diminution or destruction of the nervous energy of the skin. It is certain, that in a body but just dead, the application of boiling water will vesicate readily; and, if the accuracy of the observation respecting its non-vesicating power in advanced stages of cholera be established, we must infer that there is less vitality in the skin in such cases, the patient being still alive, than in that of a body *recently* dead of some other disease." *Report*, pp. xxvi. xxvii.

It is also remarked, that, at an early period of the disease, leeches can procure no blood from the skin.

On the state of the blood and its circulation, we are informed that "though the reports afforded ample reference on the subject, yet it appeared to the Medical Board, to be one of such importance in the pathology of the disease, that a circular letter was addressed to about thirty Medical Officers, who were supposed, from their experience in the treatment of it, to be best qualified to afford information. Attention

was especially directed to the following considerations: first, the influence which the state of the blood in those affected with cholera, might be supposed to have in producing some of the symptoms: second, the color of the blood abstracted from a vein, in a person affected with cholera: third, the color of the blood after a certain quantity had been taken, and, the effect which any alteration of color might have on the condition of the patient: fourth, if arteriotomy had been practised, the color of the arterial blood in cholera: and lastly, the period from the first attack of the disease, at which blood was abstracted. It is established by the replies to this letter, as well as by an immense mass of concurrent evidence, that the blood of persons affected with cholera, is of an unnaturally dark color and thick consistence. These appearances are very uniformly expressed by the terms dark, black, tarry, in regard to color; and by thick, ropy, syrupy, semicoagulated, in respect to its consistence. The change in the condition of the blood is likewise fully proved to be in the ratio of the duration of the disease; the blood at the commencement, seeming to be nearly, or altogether natural, and more or less rapidly assuming a morbid state, as the disease advances. Some very rare cases are recorded where, however, this morbid state of the blood was not observable, although the disease had been for some time established; and instances have occurred where the blood flowed readily, sometimes little altered, where, nevertheless, death ultimately ensued. The abstraction of blood has been found by all practitioners, to be very difficult and uncertain; and the uncertainty has been variously imputed to the feebleness of the circulation, to the thick consistence of the blood, and to

the combined operation of these causes. The blood drawn from patients suffering under cholera, is stated to be generally very destitute of serum, never to exhibit the appearance of buff, and to be generally disposed to coagulate quickly. Several instances, however, have occurred, where the coagulation was slow and imperfect. A great majority of the reports state unequivocally, that, after a certain quantity of dark and thick blood has been abstracted from a patient under cholera, it is usual for its color to become lighter, its consistence to become less thick, and for the circulation to revive; such appearances always affording grounds for a proportionably favorable prognosis. In many instances, however, no such changes have been observed to accompany the operation of bleeding, while yet the result was favorable. The blood is generally found to be less changed in appearance, in those cases of cholera which are ushered in with symptoms of excitement, than where the collapsed state of the system has occurred at an early period. The blood has been occasionally found, on dissection, to be of as dark a color in the *left*, as in the *right* side of the heart; affording reason to believe that in the whole arterial system it was equally changed. The temporal artery having been frequently opened, the blood was found to be dark and thick, like the venous blood: but it would appear that this operation has not been performed in general, until the attempts to procure blood from the brachial or jugular veins had failed: little or no blood could be obtained, the artery merely emptying itself in a languid stream, not in a jet, and then collapsing. An instance is stated where the surgeon, despairing of other means, cut down upon the brachial artery, but so completely had

the circulation failed, that no blood flowed. When reaction has been established, the blood occasionally shows the buffy coat." pp. xxix. xxx.

SYMPTOMS OF THE CHOLERA IN EUROPE.

The symptoms which this disease manifested in Russia and other parts of Europe, several years after the foregoing account of the disease, as it was noticed in India, was written, are strikingly similar, as is evident from the following accounts of the disease, selected from various authorities, who were eye witnesses.

Drs. Russell and Barry, in a joint report made to the British Government respecting the disease as it appeared in Russia, say,—

"*St. Petersburgh, July* 27, 1831.

Although there can be no doubt that the disease now prevailing here is strictly identical, in all essential points, with the epidemic cholera of India; and although there are many descriptions extant of that malady, much more ably and accurately drawn up than any which we can pretend to give; yet we are induced to believe that a short account of the symptoms which we ourselves have actually witnessed and noted at the bedside in some hundreds of cases, since our arrival here, may be useful,—first, because we are not aware that any description by an eye witness of European cholera has yet been addressed to the British Government; secondly, because the disease, as it has shown itself in this capital, when closely compared with the Indian cholera, appears to have undergone some modifications; thirdly, because,

having now studied the disease in all its stages, our description, however imperfect, will at least assist towards establishing a standard of comparison with other local epidemics of cholera in Europe, and may, perhaps, enable those who have not seen this disease, to recognise it with more certainty than they would otherwise be able to do.

The cholera morbus of the north of Europe, to which the Russian peasants have given the name of 'Chornaia Colezn,' or *black illness*, like most other diseases, is accompanied by a set of symptoms which may be termed preliminary; by another set which strongly mark the disease in its first, cold, or collapse stage; and by a third set, which characterizes the second stage, that of re-action, heat, and fever.

Preliminary Symptoms.—We have but few opportunities of witnessing the presence of all these symptoms, some of which precede the complete seizure by so short an interval, that the utmost diligence is scarcely sufficient to bring the patient and the physician together, after their occurrence, before the disease is fully formed. Diarrhea, at first feculent, with slight cramps in the legs, nausea, pain, or heat about the pit of the stomach, malaise, give the longest warning. Indeed, purging, or ordinary diarrhea, has been frequently known to continue for one, two, or more days, unaccompanied by any other remarkable symptom, until the patient is suddenly struck blue, and nearly lifeless. Often, the symptoms just mentioned are arrested by timely judicious treatment, and the disease completely averted. When violent vertigo, sick stomach, nervous agitation, intermittent, slow, or small pulse, cramps, beginning at the tips of the fingers and toes, and rapidly approaching the trunk, give

the first warning; then there is scarcely an interval. Vomiting or purging, or both these evacuations, of a liquid like rice-water, or whey, or barley-water, come on; the features become sharp and contracted, the eye sinks, the look is expressive of terror, wildness, and, as it were, a consciousness on the part of the sufferer that the hand of death is upon him. The lips, the face, the neck, the hands, the feet, and soon the thighs, arms, and whole surface, assume a leaden, blue, purple, black, or deep brown tint, according to the complexion of the individual, varying in shade with the intensity of the attack. The fingers and toes are reduced at least a third in thickness; the skin and soft parts covering them are wrinkled, shrivelled, and folded; the nails put on a bluish pearl-white, the larger superficial veins are marked by flat lines of a deeper black; the pulse is either small as a thread, and scarcely vibrating, or else totally extinct. The skin is deadly cold, and often damp; the tongue always moist, often white and loaded, but flabby and chilled, like a bit of dead flesh. The voice is nearly gone; the respiration quick, irregular, and imperfectly performed. Inspiration appears to be effected by an immense effort of the chest, whilst the alæ nasi (in the most hopeless cases, and towards their close), instead of expanding, collapse, and stop the ingress of the air. Expiration is quick and convulsive. The patient asks only for water, speaks in a plaintive whisper, (the 'vox cholerica,') and only by a word at a time, from not being able to retain air enough in his lungs for a sentence. He tosses incessantly from side to side, and complains of intolerable weight and anguish around his heart. He struggles for breath, and often lays his hand on his stom-

ach and chest to point out the seat of his agony. The integuments of the belly are sometimes raised into high irregular folds, whilst the belly itself is violently drawn in, the diaphragm upwards and inwards towards the chest; sometimes there are tetanic spasms of the legs, thighs, and loins; but we have not seen general tetanus, nor even trismus. There is occasionally a low, suffering whine. The secretion of urine is always totally suspended, nor have we observed tears shed under these circumstances; vomiting and purging, which are far from being the most important or dangerous symptoms, and which, in a very great number of cases of the present epidemic, have not been profuse, generally cease, or are arrested by medicine easily in the attack. Frictions remove the blue color for a time from the part rubbed; but in other parts, particularly the face, the livor becomes every moment more intense and more general. The lips and cheeks sometimes puff out and flap, in expiration, with a white froth between them, as in apoplexy. If blood be obtained in this state, it is black, flows by drops, is thick, and feels to the finger colder than natural. Towards the close of this scene, the respiration becomes very slow, there is a quivering among the tendons of the wrist, the mind remains entire. The patient is first unable to swallow, then becomes insensible; there never is, however, any rattle in the throat, and he dies quietly after a long convulsive sob or two.

The above is a faint description of the very worst kind of case, dying in the cold stage, in from six to twenty four hours after the setting in of the bad symptoms. We have seen many such cases just carried to the hospital from their homes or their barracks.

In by far the greater number, vomiting had ceased, in some, however, it was still going on, and invariably of the true serous kind. Many confessed that they had concealed a diarrhea for a day or two; others had been suddenly seized, generally very early in the morning.

From the aggravated state which we have just described, but very few indeed recover, particularly if that state has been present even for four hours before treatment has commenced. A thread of pulse, however small, is almost always felt at the wrist, where recovery from the blue or cold stage is to be expected. Singular enough to say, hiccough coming on in the intermediate moments, between the threatening of death and the beginning of re-action, is a favorable sign, and generally announces the return of circulation.

In less severe cases, the pulse is not wholly extinguished, though much reduced in volume; the respiration is less embarrassed; the oppression and anguish at the chest are not so overwhelming, although vomiting and purging and the cramps may have been more intense. The coldness and change of color of the surface, the peculiar alteration of the voice, a greater or less degree of the coldness of the tongue, the character of the liquids evacuated, have been invariably well marked in all the degrees of violence of attack which we have hitherto witnessed in this epidemic. In no case or stage of this disease have we observed shivering; nor have we heard, after inquiry, of more than one case, in which this febrile symptom took place.

Fever or Hot Stage.—After the blue cold period has lasted from twelve to twenty-four, seldom to for-

ty-eight hours or upwards, the pulse and external heat begin gradually to return, head-ach is complained of, with noise in the ears, the tongue becomes more loaded, redder at the tip and edges, and also drier. High colored urine is passed with pain, and in small quantities, the pupil is often dilated, soreness is felt on pressure over the liver, stomach, and belly, bleeding by the lancet or leeches is required. Ice to the head gives great relief. In short, the patient is now laboring under a continued fever, not to be distinguished from ordinary fever. A profuse critical perspiration may come on, from the second or third day, and leave the sufferer convalescent; but, much more frequently, the quickness of pulse and heat of skin continue, the tongue becomes brown and parched, the eyes suffused and drowsy, there is a dull flush, with stupor and heaviness about the countenance, much resembling typhus, dark sordes collect about the lips and teeth, sometimes the patient is pale, squalid, and low, with the pulse and heat below natural, but with the typhus stupor, delirium supervenes, and death takes place from the fourth to the eighth day, or even later, in the very individual, too, whom the most assiduous attention had barely saved in the first or cold stage. To give a notion of the importance and danger of cholera fever, a most intelligent physician, Dr. Reimer, of the merchant hospital, informs us, that of twenty cases treated under his own eye, who fell victims to the disease, seven died in the cold stage, and thirteen in the consecutive fever.

The singular malady is only cognizable *with certainty* during its blue or bold period. After re-action has been established, it cannot be distinguished from an ordinary continued fever, except by the shortness

and fatality of its course. The greenish or dark, and highly bilious discharges produced in the hot stage, by calomel, are not sufficiently diagnostic, and it is curious that the persons employed about these typhoid cases, when they are attacked, are never seized with ordinary fever, but with a genuine cold, blue cholera; nothing, therefore, is more certain, than that persons may come to the coast of England, apparently laboring under common feverish indisposition, who really and truly are suffering under cholera in the second stage.

The points of difference between the present epidemic and the cholera of India, when the two diseases are closely compared, appear to us to be the following:—

First, The evacuations, both upwards and downwards, seem to have been much more profuse and ungovernable in the Indian, than in the present cholera, though the characters of the evacuations are precisely the same.

Secondly, Restoration to health from the cold stage, without passing through consecutive fever of any kind, was by far more frequent in India than here, nor did the consecutive fever there assume a typhoid type.

Thirdly, The proportion of deaths in the cold stage, compared with those in the hot, was far greater in India, according to Dr. Russell's experience, than here.

Fourthly, The number of medical men and hospital attendants, attacked with cholera during the present epidemic, in proportion to the whole employed, and to the other classes of society, has been beyond all comparison greater here, than in India under

similar circumstances ; twenty-five medical men have been already seized, and nine have died out of two hundred and sixty-four. Four others have died at Cronstadt, out of a very small number residing in that fortress, at the time the disease broke out there. Six attendants have been taken ill at a small temporary hospital behind the Aboucoff, since we wrote last. It is certain, however, that in some cholera hospitals, favorably circumstanced as to size, ventilation, and space, very few of the attendants have suffered.

Of these facts we are likely to receive accurate statements, in answer to the written questions which we have submitted to the medical authorities through the Government here.

Convalescence from cholera has been rapid and perfect here, as is proved by the following fact. The Minister of the Interior had given orders that all convalescents, civil as well as military, at the General Hospital, should be detained fourteen days. We inspected about two hundred of these *detenus* some days back, with Sir James Wylie, and found them in excellent health, without a single morbid sequela amongst them.

Relapses are rare in this epidemic, nor have they been often attended with fatal results ; hospital servants seem to have been most liable to them. One physician had three attacks, the second severe, in which he states that he derived great benefit from the Magisterium bismuthi."

Sir William Crichton, physician in ordinary to the Emperor of Russia, in a memorial presented to the medical council of St. Petersburg, says the symptoms of the cholera at Moscow were " General unea

siness; violent headache and giddiness; great languor; oppression at the chest; pain at the pit of the stomach and at the sides; a very weak pulse, and frequent vomitings, first of undigested food, and then of a watery fluid mixed with phlegm; frequent purging; severe pains, which make the patient roll about and scream; cessation, or very scanty secretion of urine; excessive thirst; cramp in the legs, beginning at the toes, and by degrees reaching the body; voice feeble and hoarse; the eyes dull and sunk in the head; the features changed, and like those of a corpse; coldness; contraction and blueish tinge of the extremities; a coldness over the whole body; the lips and tongue become blue; a cold and clammy perspiration. The vomiting and purging soon exhaust the strength of the patient. The spasms become greater, attacking, successively, the most vital parts. The pulse ceases, the beating of the breast becomes scarcely sensible, and the patient, after having suffered the most horrible martyrdom, dies quietly, having a few minutes ease just before his end. The duration of the malady is, generally speaking, from twenty-four to twenty-eight hours; but sometimes its course is still more rapid, and sometimes slower."

The symptoms of the cholera in England are thus described in the Medico-Chirurgical Review for April, 1832.

"The cholera in England has maintained a striking resemblance to the oft repeated descriptions of its symptoms in other countries. Thus, the severe vomiting and purging of peculiar characteristic secretions; the nausea, internal burning at the epigastrium, intolerable weight, anguish, and oppression; the paroxysms of severe pain commencing at the stomach, and

rapidly extending over the whole alimentary canal; the ardent thirst; the cramps; the deadly prostration, anxiety, and dejection; the conscious feeling of the hand of death; the failing of the circulation and animal heat; the peculiar cold sweat; shrinking of the skin and subjacent tissues; sharpening of the features; contraction of the fingers, and prominence of the tendons; the hollow, sunken eye; the leaden aspect of the surface, particularly visible in the hands, feet, nails, lips, and the circles around the mouth and eyes; the black, thick blood, often not to be obtained; the difficult and slow respiration; cold breath and tongue; the whispering voice, and if death comes not in this shape, the fever rapidly coming on, often takes the last stage of typhus. The sudden invasion, speedy death, or, as rapid recovery, have all been witnessed in England, as well as in the north of Russia, and on the banks of the Ganges.

But this alarming catalogue, drawn up from the whole, presents no current picture of any individual case. These different symptoms in different persons vary infinitely in the degree of their severity, from the common diarrhea, with little pains and no cramps, and no greater affection of the circulation and temperature of the surface, than occurs from the operation of an ordinary purgative, up to the sudden attack of a prostration so alarming, that the sick man becomes scarcely sensible of pain when the secretions are retained, and the heart's action sinks at once.

To illustrate these different forms, we have made the following selection of cases.

The following bears a greater resemblance to common cholera, than to the severer cases of the present epidemic.

Mr. A. Hopton, Deputy Governor of the Goal at Durham, age 58, of rather free habits; general health not very good. On the 14th of January, he felt oppression at the stomach, sense of heat and uneasiness, with occasional nausea. At two o'clock on the morning of the following day, he was seized with violent purging, attended with most distressing cramps in the limbs: the evacuations were almost incessant throughout the day; thin and watery, of a pale white color, almost without smell; at eight in the evening, there was great alteration in his appearance; countenance blanched and anxious; features sharp; skin rather cold, and covered with a clammy sweat; pulse slow and weak; breathing oppressed; complains of most distressing thirst, some softening of cuticle of fingers; the cramps are not constant, but recur at intervals; most violent in the hands and feet; occasionally extending to the thigh; inclined to sleep in the intervals.

Treatment. Coffee, mustard, brandy, opium, cayenne pepper, camphor, carb. ammonia, and oil of peppermint. The symptoms continued somewhat mitigated on this day and the following.

The premonitory symptoms have been, in some cases, of long duration; in others absent. They are uneasiness; a sense of heat and disorder in the stomach and bowels; frequently diarrhea, which at first presents no peculiar character, so that no man could tell whether an attack of the cholera was impending or not; this has prevailed, in some cases, for a week or more before the attack, in others, it has only preceded the other symptoms for a few hours, or a shorter period.

The elder Sproat, aged 69, the first case of acknowl-

edged cholera in Sunderland, had been laboring under diarrhea a week or ten days before his seizure. On Wednesday, Oct. 19th, he had been taken worse: on Thursday and Friday, he had vomiting and purging of feculent matter, but no symptoms of collapse. On Saturday he was greatly better, took a mutton chop to his dinner, and went out to his keel in the afternoon. In about 20 minutes he returned, and was taken very ill, with severe shivering, giddiness, cramp at the stomach, violent vomiting and purging. On Sunday morning he was sinking; pulse imperceptible; extremities cold; skin dry; eyes sunk; lips blue; features shrunk; whispering voice; violent vomiting and purging; cramp of the calves of the legs, and complete prostration. In the afternoon his skin became warmer, but the other symptoms continued. On the 24th he was quite collapsed, with aggravation of all the symptoms, except the vomiting, which had entirely ceased; stools passed involuntarily. On the following morning he was less collapsed; countenance more natural; blueness of the lips had disappeared; the vomiting had ceased; but the purging still continued less violent, and nearly imperceptible; extremities cold; spasms of the legs continued. Towards evening, the purging and vomiting had entirely ceased: he became sleepy; the other symptoms continuing. On the morning of the 26th he was much weaker; pulse scarcely perceptible; countenance quite shrunk; eyes sunk; lips blue, as well as the lower extremities; the nails were livid. He was comatose, and died at 12 at noon.

2. *Premonitory Symptoms slight, and of very short duration.*

Susanna Clark, aged 18. December 5th, about 5

in the evening, she complained of uneasiness and distension of the stomach and bowels; her countenance became pallid, and expressive of much anxiety and distress. She was attacked with vomiting and purging of bilious fluids, and with cramps. She continued in this state until 8 in the evening, when bleeding was unsuccessfully attempted. She took brandy, and a mixture containing laudanum, capsicum, and ammonia. The vomiting ceased, she became much better in the night, and, on the morning of the 6th, her pulse was full and her body warm, complaining of little except a pain in the head: but, about midnight, the cramps, vomiting, and purging returned; she became cold, and apparently almost lifeless, though still sensible. Her pulse was gone; her eyes deeply sunk; she remained in the same state through the day, until 6 at night, when she became comatose, and died at 8."

Dr. Lawrie, Professor of Surgery, Andersonian University, thus describes the disease as it appeared at Sunderland, Newcastle, Gateshead, &c.

He divides the malignant cholera, as it appeared at these places, into five stages. 1. Premonitory: 2. The acute: 3. The collapsed: 4. The rallying: 5. The febrile.

"The premonitory consists essentially of diarrhea, with a slight degree of the cold stage, malaise, and perhaps spasmodic twitchings of the limbs. This stage varies from a very few hours to two, four, or even six days. The acute stage is always rapid, though varying in its symptoms. In some, it consists of a very sudden increase of the preceding symptoms, and the stage of collapse speedily super-

venes. In others, there is vomiting as well as purging, acute spasms, thirst, often acute spasm at the pit of the stomach, and almost constantly a burning, unquenchable, gnawing sensation; the pulse continues good, and the surface is not very cold. The face becomes more sunken and anxious, and the patient is very restless. Respiration is rather slow, the secretions are diminished, that of the urine suspended, the skin clammy, sometimes perspiring profusely, the voice husky. A vein opened yields blood freely. This stage may be very short, or some hours may elapse before collapse be fairly established. In some instances, the attack is instantaneous, the patient falling senseless, and recovering to be plunged into more prolonged agony. The fact is, that the modes of attack are various, and the symptoms differ in different cases."

"The majority of medical men affirm that the mind is always unimpaired. I can only say that it appeared to me in many cases affected, to a degree little short of what we find it in concussion of the brain, probably owing to congestion in the vessels of the head. I remarked this particularly in several children. When undisturbed, they lay in a dull, sleepy, semi-comatose state, breathing with perfect calmness. When roused, they thought only of relieving their distressing sensations, and vociferated for cold water. I had at one time five of the same family in one bed, all calling loudly for fluid to allay their burning thirst. So urgent were they, that they could be bribed to swallow any medicine, by the promise of a mouthful of cold water. When appeased, they relapsed into their previous sleepy condition.

"It is hardly necessary to say, that confirmed collapse is a state of extreme danger, and that it is it which destroys the vast majority of cholera patients. The cause of death, in many cases, is a failure of the functions of animal life alone; in others, affection of the brain, induced either by venous congestion or the absence of arterial blood, hastens the fatal termination.

I am borne out in this last view of the cause of death, by the fact, that, although the powers of animal life are first affected, they are in some cases the last destroyed. Convulsive movements are common after mental life is quite extinct; and, as I formerly remarked, it is almost impossible to say at what moment the vital motions have ceased to vibrate. A body lies apparently lifeless; suddenly a convulsive shudder shakes it; its hands are clenched, if you put your own within them, and force them open, they shut again with a spasmodic catch. It is not to be wondered at if these appearances have a powerful effect on the superstitious feelings of the uneducated, and make them averse to very early interments.'

"The 4th stage is that of rallying. Sometimes, but these are the exceptions, it is complete and rapid; usually it is of some hours' duration, nay, even of two or three days, and the animal powers seemed placed in a delicate balance. In some of the most rapidly fatal cases, Dr. L. had seen the heat partially return to the surface, the pulse flicker, and sensation slightly restored, immediately before death.

'5th. *Febrile Stage.* A patient who has entered the stage of collapse, is rarely restored to health, without passing through a fever closely resembling ty-

phus. My residence in Newcastle was too short to enable me to say from personal observation, what is its usual duration, but I understood that it varied from seven to fourteen days. The ordinary cases present no peculiarity of symptoms, which could distinguish them from those of common continued fever. At first I thought the tongue cleaner, and the pulse less rapid; but more extended observation showed, that these, especially the clean reddish tongue, are occasional, but by no means invariable symptoms.

Congestion of particular organs is met with at the commencement or during the progress of the febrile stage. By far the most common is that of the vessels of the brain, marked by apathy, listlessness, dilatation of the pupils, suffused eyeballs, low muttering delirium, or total insensibility. The fauces, in some cases, in which the voice had been much affected, inflamed and suppurated. Inflammation of the brain followed one case of inflamed throat. The chest I rarely found affected. The respiration in the febrile stage is usually healthy, and the lungs free from congestion. I do not pretend to say that affections of the chest have no place among the sequelæ of cholera, but that I have not met with them.

Congestions and inflammatory affections of the abdominal viscera are very frequent; indeed it seldom happens that the functions of these organs are speedily restored. Under proper treatment, the liver is not very obstinate. I thought affections of the stomach, probably its mucous surface, as indicated by troublesome retching and vomiting, and of the bowels, in the shape of constipation, fulness, and pain on pressure, much more common. The secretion of urine is restored, the skin assumes its ordinary hue,

and attains a febrile heat. The recovery is progressive, as from continued fever.'

"Dr. L. considers the disease to be the same as the Indian cholera, but characterised by certain peculiarities which he enumerates.

'First, The premonitory stage occurs in a much larger proportion of cases in the English than in the Indian disease. In the latter it was the exception, in the former it is the general rule.

Second, The febrile stage is incomparably more frequent. I have met with it in India, but it generally appeared to me to be connected with derangements of the abdominal viscera. In Sunderland and Newcastle the experience seems to be, that very few who have fairly entered the collapsed stage, escape the secondary fever.

Third, I think the head is more frequently affected in the British disease than in the Indian—as indicated by greater mental oppression and insensibility during the collapse, and more congestion in the febrile stage. In this last particular, I believe I differ from some other observers. I speak, however of my own experience only.

Fourth, My observations would lead me to say, that the frequent discoloration of the surface constitutes a fourth peculiarity. I neither met with it so frequently, nor to the same extent in India.'*

Dr. James B. Kirk, in a communication to the Greenock Board of Health thus alludes to the Cholera Asphyxia, as he saw it at Musselburgh, Newcastle, and the infected districts in the north of England.

"Let me now give you as short a description as I

* See Medico-Chirurgical Review for 1832.

can of the premonitory disease. The patient complains of lassitude; he has frequently partial uneasiness in the region of the stomach, but this not to such a degree as to alarm him. He has frequent evacuations from the bowels—from two to a dozen times a day—not attended with much griping. His countenance is sharp and dark. He knows not of this symptom, and it is only recognizable to the eye of experience. Occasional nausea may oppress him; but this is not a very common symptom. These symptoms may continue, varying in severity, from one to ten days, before the second stage of the disorder supervenes. The evacuations at the first, are generally of a dark brown or blackish hue. As the looseness continues they gradually become less and less of a natural appearance, until they assume the consistence and aspect of dirty water. Some headach, cramp of the fingers, toes, and abdomen, and almost always slight giddiness and ringing of the ears, accompany these symptoms. Sometimes an intervening two or three days of costiveness supervenes, which is followed again by the diarrhea, and in a few hours collapse supervenes, and in general, nausea and vomiting. The skilful practitioner will now give pills composed of aloes and calomel, or a pill composed of scammony, calomel, and aloes. The bowels then in general act briskly. Continue the course for three days—keep the patient warm in bed—give him mild and gentle nourishment; and, after an immense quantity of horribly offensive dejections, the patient is completely recovered, and snatched from the jaws of the dreadful fate which awaited him. Some practitioners prescribe the mustard emetic in this state, small doses of calomel and ginger, and bleeding free-

ly; but I prefer, decidedly, and on experience, the purgative system.

This is the stage to which I wish to reduce all our cases of cholera. If we get them in this stage we can cure them with as much certainty as I have indicated. The natural secretions can be speedily restored, and health to a certainty induced. In the hospital at Gateshead, every attendant had the premonitory symptoms; but the skill of their scientific attendants was at hand. Medicines were duly and regularly prescribed, and not one of them took the extreme symptoms. This has been the case, too, with almost all the medical strangers who have visited the disease, and almost all the practitioners of the district of Newcastle have had premonitory symptoms. If, after this warning, cholera should break forth, in any district to which it has been addressed, I hesitate not to say to the municipal authorities of that place, the blood of the sufferers will rise in judgment against the cruel apathy of those who ought to have been their guardians, natural protectors, and fathers.

If your patient, in this stage, is very robust, you must take blood to subdue irritation and high action; but this will be very seldom necessary, and must always be taken with the finger on the pulse, so as never to induce faintness. The disease now advances to another stage if it has been left unassisted. The cramps become stronger, and the sickness frequent and considerable. There is pain in the region of the stomach, and restlessness, and much thirst. The countenance is anxious, and the features sharper than natural. The evacuations become like barley gruel. Still, however, the pulse is not depressed, and in general, the patient can keep on foot. He is

often harassed with fits of vomiting. In this stage, too, the patient begins to experience excessive coldness of the extremities, and even partial coldness of the trunk. In all stages of the disease, except the consecutive fever, the tongue is moist, and slightly, but not deeply furred. The practitioner in this stage must step in with calomel and opium, till the healthy secretions are restored—say two grains of the former, and the fifth of a grain of the latter, continued according to circumstances. If the discharges are very violent, the quantity of opium may be increased to the fourth, the third and the half of a grain. Keep the patient warm in blankets—keep his arms and legs in strong worsted stockings. Appy heat to all parts of his body, by tins and bricks, and sand-bags; and in eight cases out of ten, the disease will not run into the stage of collapse. If the pulse will bear it do not hesitate to take a moderate bleeding, but not so free as in the last stage. I am aware that the common practice in this stage is to give, in the first place, a mustard emetic; but I decidedly disapprove of it; for I have seen, in this stage, collapse most certainly produced by the emetic. I am well aware of the partiality of many to this emetic, and of their reasons; but I must say that I disapprove of producing vomiting, in all stages of the disease, except the bilious stage of consecutive fever. I think it is apt to depress the energy of the system still farther. You will be told it gives an impulse to the system, and that it produces bilious evacuations. This forced impulse is too often the precursor of the indirect debility it produces, and hastens collapse. I entertain, however, the highest respect for the opinions of those who still practice the mustard emetic; but I am bound

to declare my conviction, and I trust in stating my opinion, they will charitably give me that liberty they would take to themselves.

The horrible symptom, collapse, comes next in order. It is characterized by pulselessness, coldness, loss of voice, terrible purging, and frequent vomiting, and a total cessation of the secretion of urine. Bleeding, and large opiates by the mouth, and stimulation by brandy, have been the practice in this stage; but I have no hesitation in saying that large opiates are wrong, and that general bleeding, in general impracticable, is often hurtful, and seldom useful. I dare not detain you in giving my reasons for this opinion; but I have studied the subject with intense anxiety, and watched the practice in various hands, and I am bound to declare my conviction.

The best practice is to give a large enema, of from three to four pounds, of as hot water as the hand can bear, with six ounces of brandy and two drachms of laudanum. After one hour, this enema should be withdrawn, by a tube introduced into the rectum. The enema is generally returned very cold, and another hot injection should then be thrown in.

All the ordinary means of restoring heat should be studiously attended to: warm diluents frequently given, with small portions of brandy. An insatiable thirst prevails, and the patient should be occasionally indulged in his anxiety for cold water. He is generally denied it, but this is as cruel as it is unnecessary. I would certainly be careful of the quantity. I would withdraw this injection at the end of another hour, and then introduce an enema of a pound and a half of warm water, in which two drachms of common tobacco is infused. In nineteen cases which I have

witnessed, pulsation and reaction have followed the use of the tobacco, and bilious evacuations and increased temperature. The action of vomiting has nothing to do with the result; for in three cases which I witnessed, there was no vomiting after the exhibition of the medicine. We are indebted for this practice to an ingenious and most amiable gentleman, Mr. Baird, of Newcastle. If there is much pain of the bowels, particularly about the stomach, you can raise an instantaneous blister by applying to the stomach a cloth lifted out of boiling water, with great and immediate advantage. I consider the vapor bath and air bath as very inefficient and trivial remedies; but the hot tin mattress which is used in the Hospitals of Edinburgh, will be found the greatest improvement possible; because it will heat the back, which was never effected by any other process before. Next to this, I prefer sand-bags to all other modes of giving heat. During the whole stage of collapse, I would recommend that from two to three grains of calomel be given every two hours; and if the cramps, pains, and sickness are severe, I would add to the calomel a quarter of a grain of opium. I would satisfy the raging thirst; and, from its saline qualities, perhaps contribute to the melioration of the state of the blood, by giving every hour, or after every fit of vomiting, an effervescent draught, composed as follows: Three drachms of super-carbonate of soda, dissolved in eight ounces of water; a dram-glassful mixed with one table-spoonful of lemon juice, and a glass of water. This is an invaluable remedy, and should never be omitted. If you are fortunate enough to begin to see that the evacuations become feculent, then step in with full doses of calomel, with the addi-

tion of jalap or rhubarb. If vomiting is a harassing symptom, cup the epigastrium, and add a few drops of laudanum to your effervescing draught. If the collapse is very complete, the actual cautery is sometimes practised over the course of the spine; from the accounts of my friends, and the three cases which I witnessed, I would think often with advantage. I cannot take leave of this stage without again most earnestly recommending the large hot injections.

Blueness has been said generally to characterize this stage; but in this country that is not the fact. The skin of the hands and face is brownish, not blue. If death is to ensue, there is a dreadful low wail of voice, which no man who has heard can ever forget. The lowest moan of the most wretched mendicant goes not to the heart so poignantly. A cold, clammy sweat breaks forth on all the surface; the temperature rises, and the pulse even becomes more perceptible; the dejections become frequent and severe; and vomiting sometimes, though not always, is excessive; in a very short time the patient is a corpse. Sometimes, indeed, the vomiting and purging, and even the cramps cease in collapse, altogether; and when the spasms cease. I have observed that the cases are always the most incurable. But if nature is to rally, the dejections become less frequent and more feculent; the vomiting diminishes or ceases; the pulse gradually and steadily improves in fulness and in tone; the voice becomes more powerful; the strength improves, and the unfortunate is snatched from the dreadful fate that seemed to await him. But the horrors of this dreadful disease do not stop here. The system, by the peculiar poison producing this distemper, has been sunk into the lowest state of

human existence. Those vessels which had ceased to beat, and all those muscular fibrils which have been for days convulsed and sealed up in spasm, cannot at once resume their healthy action. The *vis medicatrix naturæ*, in resuming her play, seems over solicitous for the restoration of the functions; and consequently she institutes an increased, and dangerous action in every artery of the system.

The tenderest and most important organs of the system, the brain, the lungs, and the liver, are now in imminent danger; and the skill of the physician is called into play, not to be executed in stages and degrees, but at once, promptly, and decidedly. Does congestive action manifest itself in the head, the cupping glass or leeches should instantly be applied, and vesication produced over the whole scalp in twenty minutes, by an application of a strong infusion of cantharides in the strongest acetic acid. The lancet must not now be spared, and drastic purgatives are to be freely administered. If the lungs are the seat of high action, indicated by oppression of breathing, sense of suffocation, full, large, and bounding pulse, and often spasm in the chest, bleed freely, and do not spare purgation; and give 30 drops of wine of antimony every three hours. In bad cases, place the patient in a half-sitting posture. This practice is most important. I am indebted for this hint, to John Fyfe, Esq. of Newcastle, an excellent and eminent Surgeon, and I think, from positive experience, that it is a practice highly worthy of attention. A greenish matter is now often largely discharged from the stomach, for which one or two emetics of common salt may be given with advantage. You must now attend carefully to the state of the bladder, as now the

urine is secreted largely, and dangerous retention frequently takes place. The eminent Mr. Fyfe thinks that the duration of the consecutive fever is commensurate with the duration and severity of the collapse; and not much dependent on the kind of remedies employed. This conclusion is doubtless generally correct. But sometimes a very mild case precedes a dangerous fever; and sometimes after the severest collapse, there is no fever at all. This fever, unless strictly watched, is more frequently fatal than collapse itself. After the purgatives I have recommended, three grains of calomel every four hours till the mouth is touched, is the best practice; but it is difficult to touch the mouth. At the end of two days, the calomel should be succeeded with mild aperients, castor oil, and laxative enemata. When the pulse rises under depletion, do not hesitate to repeat the bleeding boldly. Even three or four days after reaction, dreadful oppression of the brain frequently supervenes. This state should be treated exactly as we do Hydrocephalus Acutus. I ought to remark that the consecutive fever always assumes the shape of Hydrocephalus Acutus in infants, and should be treated accordingly. If recovery is effected from this consecutive fever, it is not uncommon that relapses more or less severe take place. These relapses take place as often after the mild, as after the severest form of the disease; and may be generally traced to some imprudence in diet, or exposure to cold. We must treat them in the same mode as the original disease, diminishing the quantity of our doses."

For the symptoms, &c. of the disease, as they ap-

peared at Paris, the reader is referred to the excellent lectures of Broussais, in another part of this work.

In Canada, and all the other places on this continent where the disease has prevailed, it has exhibited the same symptoms as in Asia and Europe. Great hopes were long entertained that if the cholera should appear in this country, that our climate, habits, and sparseness of population would modify the disease, and mitigate its severity. But facts show us that such hopes are not to be realized, for the malady has been as fatal here as in Europe.

Dr. Robert Nelson, member of the Medical Board and Commmissioner of Health at Montreal, thus describes the mode of attack and symptoms of the disease in Canada :—

"During the first four or five days of the epidemic, the patient was subject, for the most part, in one of the two following modes :—1st. After a trifling diarrhea, of several days duration to a few hours only, nausea, quickly followed by vomiting, and an increase of diarrhea, would usher him into that stage of the disease, which may be called the 2nd mode of attack. 2d. The patient is affected with a slight blueness of hands and face, sometimes accompanied by a distressing sensation of weight and burning in the stomach, rapidly followed by vomiting and diarrhea ; when the vomting had once come on, the thirst would commence and be intolerable ; cramps in the limbs, and about the pericardia, blueness quickly extending towards the trunk ; profuse cold perspiration, (if perspiration it be) and loss of voice. The severer cases would terminate in death, in a period from three to

six hours, while some might run on to twelve or more.

After the first four or five days, the mode of attack was not so invariable, for while burning thirst, pain at the stomach, cramps, asphyxia, perspiration, cadaverous coldness and aphonia, characterized the malady, vomiting and purging might be absent, and yet the case would rapidly run to a fatal termination.

About this time, and still later, many cases assumed a febrile character, the first pyrexial period of which might be called the choleric stage. But as the danger resided in this choleric stage, and the recovery of the patient wholly depended on arresting some one or two of the symptoms, it will be proper, in order to found a rational mode of treatment, to analyse these latter.

However, before taking up that subject, let us stop a moment to examine the matter voided. The matter vomited was at first what happened to be in the stomach; after that it was watery. The alvine discharges were without odor, in large quantities, whitish, like rice water, or a mixture of arrow root and water; this white substance has been ascertained to be fibrin. Perspiration abundant, cold, and slightly adhesive as if mixed with dissolved epidermis—doubtless it also contained fibrin; but this last fact has not been decided.

Besides the intestinal canal and the skin, all other organs furnished no secretion. Tears, pituita, saliva and urine, the secretion of which is totally suspended; as to tears, the greatest anguish of dying, in full possession of the intellect, surrounded by all that is at once endearing and afflicting, could not produce them. Some complained of great pain, and desired to make

water, but the bladder contained no urine, and after death was found to be contracted to the smallest size; this desire of voiding water might arise from the contraction of the posterior disk of the bladder hard against the internal meatus, which on autopsy was found to be the fact. In this disease, there is every reason to believe that every species of secretion, in all parts of the body, is abolished. No known function of the intestinal mucous membrane could form matter like unto that discharged, and as there is no circulation going on in the skin, but rather a complete state of asphyxia in that part, there can be no *secretion* of perspiration. We now naturally come to the question—Whence and how come these discharges? On the skin, certainly not from circulation, for there, there is none—*ex nihilo nihil fit*—and it is more than probable, that the capillary circulation of the mucous membrane of the intestines is equally absent. It would appear as if the elements of the body, composing the parts nearest to the surfaces, became subject to new affinities, forming new substance, incapable of being retained by the membranes, but rapidly oozing through them. Two facts go to support such an hypothesis. 1st. The abundant new formation transuded, where no circulation exists; and 2d, the rapid *amaigrissement* of the body. This wasting of the body is not apparent, it is real; the usual roundness of parts is taken off, and tendons and other salient points become strikingly prominent."

In the cases which have occurred at New-York and Albany, the same symptoms have been noticed. The second week in July, I saw many cases of the disease in New-York, in all of which, the above

symptoms were present. First, diarrhea, though often of only short duration, then nausea and vomiting, though in some instances the vomiting was slight, to which succeeded a sinking of the circulation, coldness and blueness of the surface, burning thirst, spasms, and death. In most of the cases that I have seen, the discharges from the the stomach and bowels were light colored, resembling arrow root and water, or starch and water, and were without odor. In many cases, however, vomiting and purging were not among the most prominent symptoms, and the stage of collapse or great prostration, did not appear to arise from profuse discharges, as in many of the cases the most remarkable for sudden prostration, coldness, blueness, &c., the patients had vomited or purged but very little.

Having thus completed an account of the symptoms of the cholera, as they have been witnessed in different parts of the world, we shall now give an account of the appearances found on dissection of the bodies of those who have died of the disease in Asia, Europe, and in this country.

APPEARANCES ON DISSECTION, &c.

We have seen in the foregoing accounts of the symptoms of the epidemic cholera, selected from various writers, that a most remarkable uniformity of symptoms has been noticed, in all countries where the disease has prevailed. The accounts of this disease, from Asia, Persia, Russia, Poland, England, Canada, and the United States, all agree as respects the symptomatology, and as I have before observed, the description of the symptoms of the cholera, as they were noticed in India, would be an accurate account of the epidemic, as it now appears in New York.

But notwithstanding this agreement respecting the symptoms of the disease, we are surprised to find that the accounts of the morbid appearances discovered on the dissection of those who had died of the disease, are exceedingly variable, and often contradictory; and as yet have thrown but little light on the pathology of the disease, or furnished any important guidance as regards the treatment of it.

This disagreement respecting the morbid appearances, has not, however, arisen from any neglect of authors and observers to describe the appearances discovered on dissection; but they have unquestionably been different; and this difference has probably been caused by the greater violence of the disease in one case than in another; by the age and constitution of patients, and the remedies administered.

The accounts from India, respecting the morbid appearances, are numerous and full.

The Bengal Medical Report, drawn up and published soon after the appearance of the disease in India, thus refers to the results of post mortem researches.

"Of those who died, it was believed, perhaps rather fancifully, that the bodies sooner underwent putrefaction, than those of persons dying under the ordinary circumstances of mortality. The bodies of those who had sunk in the earlier stages of the malady, exhibited hardly any unhealthy appearance. Even in them, however, it was observed, that the intestines were paler and more distended with air than usual; and that the abdomen, upon being laid open, emitted a peculiar offensive odor, wholly different from the usual smell of dead subjects. In the bodies of those who had lived some time after the commencement of the attack, the stomach was generally of natural appearance externally. The color of the intestines varied from deep rose to a dark hue; according as the increased vascular action had been arterial or venous. The stomach, on being cut into, was found filled, sometimes with a transparent, a green, or dark flaky fluid. On removing this, its internal coats in some cases were perfectly healthy; in others, and more generally, they were crossed by streaks of a deep red; interspersed with spots of inflammation, made up of tissues of enlarged vessels. This appearance was frequently continued to the duodenum. In a very few cases the whole internal surface of the stomach was covered with coagulable lymph; on removing which, a bloody gelatine was found laid on the interior coat, in ridges or elevated streaks. The

large intestines were sometimes filled with muddy fluid, sometimes livid, with dark bile, like tar; just as the individual had died in the earlier or later periods of the attack. In most cases, the liver was enlarged, and gorged with blood. In a few it was large, soft, light-colored, with greyish spots, and not very turgid. In others again it was collapsed and flaccid. The gall bladder was, without exception, full of dark green or black bile. The spleen and thoracic viscera where in general healthy. The great venous vessels were usually gorged; and in one case the left ventricle of the heart was extremely turgid. The brain was generally of natural appearance. In one or two instances, lymph was effused between its membranes, near the coronal suture, so as to cause extensive adhesions. In other cases, the sinuses, and the veins leading to them, were stuffed with very dark blood."

Dr. Burrell, of the 65th Regiment, thus described the appearances found on dissection, and the good effects of bleeding in cases that occurred among the European soldiers.

"*Seroor*, 10*th August*, 1818.

"As dissections of cases of cholera morbus were not sent you along with my statement of the 28th ult. I beg to send you a few remarks on this subject.

As congestion has been found in all our former fatal cases, I yesterday had another demonstrative instance of the eligibility of bleeding in cholera.

John Stokes, of the 65th regiment, a man recovered from chronic syphilis, was attacked in our wards with vomiting and purging, at eight P. M. of the 8th inst. When seen, his hands and feet were cold, with

some rigidity. Under these circumstances, and he being of a weakly habit, bleeding (I may say unfortunately) was not used. The usual remedies, with the hot bath, were tried. He died on the 9th inst., at two, P. M.

In company with Dr. White, of the 2d N. I., and Assistant-surgeon O'Reilly, 65th regiment, I opened the body. The liver was found of a dark color, distended with blood, and the gall-bladder full of bile. The spleen of an extremely blue color. The omentum inflamed, and veins filled in every part. The small arteries of the intestines of a lively red, and the colon contracted through its length to the size of a middle finger, and its calibre so small as hardly to allow a scalpel handle to be introduced.

The veins of the stomach more particularly arrested our attention. On the great curvature, they were of an intermediate size, between a crow's and a common quill. These turgid veins were more apparent internally, and the most forcible injection could not have more completely filled the vessels. The mesenteric vessels, as well as the vessels of every other internal membrane, partook of this appearance of formerly increased action. The lungs were dark, and suffused with blood; this, most probably, is the cause of the stertorous and labored breathing present in almost every fatal case.

From former dissections, and the appearances in this case, little doubt ought to arise regarding the exigence of bleeding in almost every case, but more especially in the first hours of attack. If even during the cold and rigid state of the limbs, should the pulse rise in the hot bath, which it generally does, we ought not to hesitate in opening a vein; as recovery from

this stage is most precarious, and every experiment may therefore be tried.

As dissection in this disease has shown, and will in every case show, turgidity, if not inflammation, of the vessels of the internal parts, no hesitation as to what line of practice is best, should harbor in the minds of medical men during the prevalence of so dreadful a disease.

Under this idea of increase of action internally, and consequent want of balance in the circulation, from which arises the coldness and shrinking of the external parts, I commenced the bleeding system; and of the cases admitted of cholera, since the 21st ultimo, up to the 10th August, the casualties run thus,

Bled,	88	Dead,	2
Not Bled.	12	Dead,	8
Total admissions,	100	Deaths,	10

Our cases of dysentery in the chronic stage, in the hospital, have been aggravated in many instances, appearing as if the epidemic give a peculiar character of symptoms to the usual endemical diseases.

Relapses of cholera have not been unfrequent, and the regularity of the bowels must be strictly attended to in the stages of convalescence.

Some of these relapses require the same treatment as the original attacks. In one European woman the attack proved fatal."

The Madras Medical Report, drawn up by Mr. Scott, thus fully describes the morbid appearances discovered on dissection, by the medical men in India.

"The external appearance of European subjects,

who have sunk under cholera, closely resemble that which has been noticed as taking place during life. The surface is livid, the solids are shrunk, the skin of the hands and feet is corrugated. There seems no sufficient evidence of any uncommon tendency in the body to putrefaction after death, nor of any characteristic fœtor from the abdominal cavity. No particular morbid appearances have been found in any of the cavities of the body, which are lined with *serous membranes*, or in these membranes themselves. The cavities of the pleura, of the pericardium, and of the peritorium, have almost uniformly been found in a natural state; or the deviations from that state have manifestly had no connexion with cholera. The surfaces which are lined, or covered with *mucous membranes*, have, on the contrary, very generally exhibited signs of disease. These will be noticed, as the organs connected with them come to be mentioned.

The lungs have not unfrequently been found in a natural state, even in cases where much oppression of respiration had existed previously to death. Much more generally, however, they have been found either to be gorged with dark blood, so that they have lost their characteristic appearance, and have assumed more that of liver or spleen; or they have been found to be in the opposite state; that is, collapsed into an extremely small bulk, and lying in the hollow on each side of the spine, leaving the cavity of the thorax nearly empty. This appearance has been so remarkable as to induce Dr. Pollock, of H. M's. 53d regiment, to conceive, that it could only be produced by the extrication of a gas within the cavity of the pleura, capable of overcoming the atmospheric pressure. It is understood, however, that opportunities were had of pier-

cing the thorax of the dead body under water, and that no gas was extricated. As there appears to have been an absolute vacancy in the cavity of the pleura, that is to say, the lungs did not by any means fill it, it would seem that the viscus had exerted a contractile power, adequate to overcome the pressure of the atmosphere. The blood found in the lungs has been always very black. The heart and its larger vessels have been found to be distended with blood, but not so generally as the apparent feebleness of their propelling power, and the evident retreat of the blood to the centre, would have led us to expect. The right auricle and ventricle being gorged with blood, is nothing peculiar to cholera; but some dissections have shown the left cavities to be filled even with *dark* or *black* blood, which we may reckon as a morbid appearance more peculiar to it. In the abdominal cavity, the peritoneal coverings of the viscera, being *serous membranes*, present in general but little deviation from the healthy state: occasionally, indeed, the morbid accumulation of blood in the vessels of the viscera, imparting an appearance of turgidity and blueness, is evident on their exterior surfaces. We also find them bearing marks of inflammation, especially where the patient may have lingered before death. In other cases, the whole tube has had a blanched appearance, both externally and internally. The stomach and intestines generally preserve their ordinary volume. The appearance of the omentum is not sensibly affected in cholera. The stomach is found to be so variously affected, as to destroy all grounds for pathological reasoning. It is very rarely found empty or much contracted after death, nor has any appearance of spastic stricture of the pylorus been often detected.

It has, however, sometimes occurred. Its contents appear to be chiefly the ingesta, in an unaltered state; in some cases, greenish, or yellow, or turbid matters are found. The stomach has been said to have been found 'lined with calomel.' Various appearances, either of active inflammation, or a congested state of the vessels, have been noticed, sometimes in one part, and sometimes in another. The parts seem as if they were sphacelated, thickened, softened, and friable; and, in short, exhibit so great a variety of appearances, from a perfectly natural state, to the most morbid, that no particular light is thrown by them on the disease.

The intestinal tube is sometimes collapsed, but oftener found to be more or less filled with air; distended in some parts into bags or pouches, containing whitish, turbid, dark, or green colored fluid; and, in others, presenting the appearance of spastic constriction. The latter, however, is not common. No fæcal or other solid matters are found in the intestines; but, very commonly, large quantities of conjee-looking fluid, or of turbid serous matter. The duodenum, and occasionally, the jejunum, have been found loaded with an adherent, whitish, or greenish mucus; at other times they have been found seemingly denuded of their natural mucus; and often perfectly healthy. Traces of bile in the intestines, or of any substance apparently descended from the stomach, are exceedingly rare. Sanguineous congestion, and even active inflammation, are stated to be more common in the bowels than in the stomach; but, on the other hand, instances are very numerous where no such indications have been detected. The thoracic duct is stated to have been empty of chyle. The liver has been commonly found gorged with blood, but not always; it is an organ usu-

ally very vascular; and it would probably demand a nicer discrimination than has been bestowed on the subject, to distinguish the degree of congestion in which it is naturally left by the settling of the blood after death in ordinary diseases, from that which has been observed after an attack of cholera. The gall bladder has almost universally been found to contain the bile, and, in the great majority of cases, even to be completely filled with it. As is usual with this secretion, in cases of retention, it is of a dark color. Very different states of the gall-ducts have been described; cases of constriction and impermeability, seeming to be equally numerous with those of an opposite character.

The urinary bladder is found, we may say universally, without urine, and very much contracted. The lining of mucous membranes of the bladder and ureters, have been found coated with a white mucous fluid. The smallness of the bladder, after death, has been generally adduced in proof of great spasms; but it is not unfrequently found to be equally small after death, from other diseases; and it seems the nature of that organ, when it contains no urine, to contract, so as to leave no cavity. Dr. Baillie, in his morbid anatomy, thus notices this fact. 'The bladder is also found contracted to such a degree as hardly to have any cavity. This is generally not to be considered as a disease, but simply as having arisen from a very strong action of the muscular coat of the bladder previously to death.' The appearance of the spleen, which is so various under the ordinary conditions of the body after death, has indicated nothing that can be mentioned as belonging to cholera. The vessels of the mesentery have been very generally

found to be uncommonly full of blood. In the head, appearances of congestion, and even of extravasation, have been frequently observed; but not so uniformly nor to such extent as to require any particular notice. Only one case has been given where the state of the spinal marrow was examined; and, in that, indications of great inflammation were detected in its sheath; the case, however, was, in some degree, a mixed one.

From this general view of the appearances found on dissection of the bodies of persons who have died from cholera, it is manifest that the information thence derivable, is, in a pathological view, of a negative nature only. It is nevertheless of consequence, in a practical sense, especially in treating the sequelæ of cholera."

Dr. John Kinnis, in a report addressed to Sir James M'Gregor, Director General of the Medical Department of the Army, thus sums up the morbid appearances in those who died of cholera at Mauritius, in 1819 and 1820:—

"In one case, the brain was mangled by an officious orderly, during a momentary absence of the operator; and in another, appeared natural; but in all the rest, there was serous effusion into the ventricles; and in the greater number, likewise between the membranes and on the base of the cranium; when between the membranes, before these were divided, it resembled a transparent jelly.

In exactly one half of the cases, there was effusion under the dura mater of the spinal cord. The veins of its pia mater generally appeared very turgid, but, having very lately begun to examine the spine on dis-

section, I was doubtful whether to consider this a natural or a morbid appearance, and seldom noted it down. In one case, the blood contained in these vessels was of an arterial color, resembling a coarse injection; in another, it was partly venous and partly arterial.

The circulating system presented, in general, no deviation from the usual appearances; none of that congestion in the lungs or any of the viscera, which others have found, and which seemed to offer so plausible an explanation of the most remarkable symptoms attending the disease. In one case, all the cavities of the heart were empty; and in three, the interstices betwixt its columnæ carneæ and musculi pectinati, filled with a frothy blood. In two cases, the heart appeared unusually flaccid; and in one of them, the parietes of its left ventricle unusually thin. Once the pericardium contained two drachms of a pale reddish fluid.

The abdominal viscera seldom presented any thing unusual externally; yet in one case there was scattered over them gelatinous, semi-transparent flakes, and the abdomen contained half a pint of serum. The small intestines exhibited in four cases a very light arterial blush, and in the one where this appearance was most distinct, the omentum adhered to the peritonæum for some inches on the right side. In several cases, the large intestines and the mesentery were loaded with venous blood, and in two, the lower portion of the ilium, and the large intestines, were blue, or greenish blue externally, and dark red internally.

The speckles, natural to the mucous coat of the stomach, were sometimes merely paler than usual,

or of a dark venous hue; in other cases, instead of a speckled surface, there were large black or greyish black patches, at one time distinct, at another coalescing into ridges upon the rugæ of the stomach, and apparently arising from effused blood. Where mercury had been taken in great quantity, these patches were few in number, or rather obscured by a black or dull green thick ropy mucus, which lined the stomach, and was interspersed with greyish portions; in such cases, the stomach contained a considerable quantity of a similar substance, in a more liquid form; in one case it contained a thick grey and dark reddish colored mucus.

The small intestines were generally thickened, and lined with a substance resembling in color and consistence shoemaker's paste. In eight of the cases examined, the lumbricus teres was found imbedded in this substance, sometimes to the number of eight or nine; and one patient, in whom none were found on dissection, had vomited them before death.*

The large intestines were either contracted and empty, or filled with a greyish white puriform, sometimes fœtid, or dark brown fluid. In one case, the rectum resembled an hour glass, being distended with fluid, and contracted in the middle.

In three or four instances, the gall-bladder was flaccid; in general, it was distended beyond the margin of the liver, with blackish green thick bile. It was, in one subject, whitish, translucent, and about

* My friend, Mr. Gillespie, one of the surgeons to the civil hospital, informs me, that he has seldom had occasion to open a Black subject, without finding worms in the intestines. Whether they may equally infest European adults in this island, I have yet had few opportunities to determine. They are here, as every where else, very common in children.

an inch from its fundus, divided by a narrow neck into two bags, both of which were filled with a thin white fluid, intermixed with purulent looking flakes; the cystic duct appeared at first imperforate, but with a very little force, the probe could be passed to the duodenum. The gall-bladder communicated freely with that gut, in every other case.

In the patient who had complained of inability to void urine, the bladder was contracted and empty, as it almost always is after death.

Dr. Annesley, who has furnished one of the best descriptions of the disease, finds from Autopsic investigation that the intestines present a vermilion color, which he says is peculiar to the disease. Dr. A. further declares that the anatomical appearances are the same in all the cases he examined.

Dr. Alexander Gordon, a surgeon attached to the Bombay Presidency, a man of great merit, and who fell a victim to the disease, says the lesions of the brain were primitive and essential, while those of the intestines were only secondary.

In Europe, the same diversity of morbid appearances have been noticed, as have been found in India. Dr. Kier, in a report respecting the cholera at Moscow, in the autumn of 1830, thus describes the *post mortem* appearances:

"The appearances in the dead bodies were not uniform, and varied according to the duration of the disease, and the circumstances under which the patient had died. As this was the case, I conceive the most satisfactory way by which I can answer the inquiry on this head will be to transmit the printed accounts of the dissections made at Moscow, and pre-

sented to the Medical Council there, by its members who occupied themselves the most with this part of the duty; while I here add the impressions made on my own mind, by the dissections at which I was present.

The extremities in general, were more or less livid and contracted, and the skin of the hands and feet corrugated, the features sunk and ghastly; on opening the scull, the blood-vessels of the brain and its membranes were more or less turgid with blood, particularly towards the base; the arachnoidea had sometimes in several places lost its transparency, and adhered to the pia mater; a fluid was sometimes found effused into the convolutions of the brain, in some quantity, and more or less serum in the lateral ventricles. The blood-vessels of the vertebral column and spinal chord, more or less loaded with blood, which was sometimes effused between its arachnoid and dura mater; partial softening of the substance of the spinal chord was sometimes met with, and marks of inflammatory congestion in the larger nerves. The lungs were generally gorged with dark-colored blood, the cavities of the heart filled with the same, and frequently containing polypous concretions. In all the dissections I was present at, very dark-colored blood, which, when extended on a white surface, resembled the color of the darkest cherry, was found in the arch of the aorta, and in other arteries.

The state of the abdominal organs varied considerably, the stomach and different parts of the intestines were frequently found to be partially, but considerably contracted; the internal surface of the stomach sometimes seems to be little affected. A whitish or yellow

fluid matter resembling the evacuations, was frequently found in the alimentary canal, which now and then contained a good deal of air. In either case, both stomach and intestines bore marks of congestion, and of a sub-inflammatory state, varying from dark-colored spots of small extent, to several inches, affecting the whole internal surface of the intestines. The color of these parts also varied a good deal, from dark-colored venous congestion, to rose-colored inflammation. In one case, the internal surface of the stomach was so strongly and so generally tinged of a very dark color, that it might easily have been mistaken for gangrene. On exposing the stomach between the eye and the light, it was evident that there was neither gangrene, nor solution of continuity, but that the dark color proceeded from a very general and great congestion of very dark colored blood, in the vessels of the organ. The subject of this case, I was told, had died with symptoms of a typhoid nature, after suffering from the usual symptoms of the epidemic. Excepting in this case, which was evidently one of congestion, and not of inflammation, I saw nothing in the morbid appearances from which a conclusion could be drawn, that inflammation was a very general morbid change in the alimentary canal, or a common cause of death: however, by its presence in the second period of the disease, it might add to the general irritation, or, even as a consequence of preceding congestion, be itself occasionally, the cause of the fatal event. Both stomach and bowels were frequently of a paler color than natural, both on the outer and inner surface; but neither thickening nor condensation from inflammation, nor exulceration, de-

struction of substance, nor abscess, appeared in any of the dissections I was present at.

The liver was generally pretty full of dark-colored blood, the gall-bladder frequently much distended with tenacious ropy bile, of a dark yellow or green color; the gall-ducts sometimes contracted, at other times not; the appearance of the pancreas, spleen, and kidneys was various, frequently differing but little from their natural state, in other cases, rather surcharged with blood, the urinary bladder almost always collapsed and empty, the uterus generally natural."

The Medico-Chirurgical Review for 1832, thus describes the results of post mortem inspections in England:

"Dissection of the subjects dead of this disease, have not been frequently performed: the same prejudices of the ignorant multitude have forbidden it here, as in all other countries. Yet so far as opportunities have been afforded, and these have been few indeed, the same general appearances, and similar varieties in different cases, have been observed in this country.

The entire absence of fæcal matter in the contents of the intestines: the presence, in greater or less quantity, of matter such as the peculiar evacuation; the serum-like fluid, more or less abounding with floculi of coagulated albumen, which are occasionally found in such quantity, as to line the mucous membrane with a tenacious substance, like paste; an odor of putrifying mucus, somewhat like that of offensive lochial discharges, occasionally present; the serous fluid being frequently more or less tinged with blood, and that of the stomach often mixed with the

latest ingesta; the upper part of the duodenum often slightly tinged with bile; frequently contractions of different portions of the colon; occasionally introsusceptions; the gall-bladder distended with unhealthy bile; its ducts sometimes strictured, and the urinary bladder empty and remarkably contracted.

The mucous membrane of the alimentary canal, generally somewhat softened; sometimes of an unnatural paleness throughout, but oftener having various portions tinted of different hues, from the pale rose, to dark brick-dust and slate colors, as venous or arterial injection predominates; patches of ecchymosis and arborisations of the larger branches are frequent; but the most common appearances have been a red or purplish speckling of the membrane, generally over the whole, or more apparent in some parts than in others; or an injection confined to the prominent parts of the rugæ of the stomach and valvulæ conniventes of the intestines. Sometimes these different appearances are scattered throughout the whole extent of the mucous membrane; at other times, the stomach alone is colored, and the intestines pale, or the stomach pale, and different portions of the intestines darkly injected; however, these appearances are most frequent about the smaller extremity of the stomach and lower portion of the ileum. The venous trunks of the stomach and intestines are generally found greatly engorged; such also frequently takes place with the liver and spleen, and almost in every case in the venæ cavæ, and auricles of the heart. The blood remaining fluid, of an exceeding dark and peculiar consistence and adhesiveness, likened by some to treacle poured over the cavities of the heart. The lungs frequently exhibit a remarkable shrinking,

like that of the skin and subcutaneous tissues (which led in India to the body being opened under water, to ascertain if air existed in the cavity of the pleura), then blood of the same dark hue; frequently they are engorged so as to resemble hepatization somewhat, but still crepitous and lighter than water. The obstruction of the bronchiæ, by peculiar secretions, has not here been noticed amongst the cases from the North of England: the brain of two only has been examined; in one, the vessels were very turgid, and half an ounce of serum was contained in the lateral ventricles; in the other, a very highly injected state of the vessels externally to the brain, and in the cortical substance of the upper parts of the hemispheres, and in the cortical substance or upper part of the medulla oblongata was found, with depositions of lymph upon the surface of the brain and cerebellum, and five or six ounces of serum in the base of the skull.

Turgesence of the vessels of the brain and spine has been at all places a very frequent appearance, and serous effusion beneath the arachnoid in the cavity of the cranium and spinal canal, and in the lateral ventricles. It has seldom been observed how often these appearances have existed; but in the report of Dr. Kinnis, from the Mauritius, decidedly the best of any which have yet been published, as affording the greatest extent of information on the many important considerations connected with the cholera, in 13 cases, where the brain was examined, serous effusion was found in all but two, one of which appeared natural, the other was mangled by an officious orderly during a momentary absence of the operator, and in one half of the cases where the spine was examined,

there was effusion under the dura mater of the cord, and the veins generally turgid.

It has been a general complaint, that the state of the organs after death has thrown no light on the nature or causes of the disease, and that they afford no explanation of the severity of the symptoms. It is true that they do not explain these, as the inflammation, tumefaction of the membrane, and fibrinous effusion in croup does the affection of the voice, and suffocation met with in that malady; but they do throw as much light, as post mortem examinations in general, on the seat and nature of diseases; and this instance may serve as a useful comment on the present mania for the exclusive cultivation of morbid anatomy: we feel and acknowledge its great advantages, and the precision in this obscure science, which is derived from such researches; but the man who wishes to treat disease successfully, must not consider his only aim and object to be the knowledge of the various morbid changes which take place in the structure of the different organs, and of the symptoms by which they are distinguished; his researches must be directed beyond this—to the laws of vital actions; to the manner in which they are disordered, and to the agents capable of restoring them to their healthy state.

We regret exceedingly that any idea of post mortem examinations being of little utility in investigations into the nature of the disease, should have thrown a damp on the interest with which they have been prosecuted, and thus have deprived us of much valuable information. It is, unquestionably, important to ascertain if any connexion exists between the various fatal forms of the cholera, and the different pathological conditions of the organs affected: but

Post Mortem Examination ten hours after death.

Examination of Margaret Black's body. On opening the chest and abdomen, the omentum exhibited no unnatural appearance; the mesenteric veins were in a state of complete congestion; the stomach contained from two to three pounds of the same veal soup-like fluid as had been vomited during life; the internal and peritoneal linings were very pale and bloodless, and in several parts there were vascular patches; the duodenum contained a quantity of the same turbid fluid, which the whole canal was less or more filled with; the lining of the pylorus was unusually pale, but there were a few gangrenous patches on it; a considerable quantity of pearly colored mucous was found covering the lining membrane of the intestines; submuriate of mercury was blended intimately with this mucous, which produced the appearance of black-wash, proving, perhaps, that lime was present. Super-carbonate of soda was mixed with another portion of it, but no effervescence took place. Spleen much darker than natural, and more engorged with black blood; liver pale, of a mottled appearance, and much softer than natural; gall bladder about two thirds full of a very dark green bile; gall ducts not closed or filled up, so that bile could be pressed out of the bladder with ease; lungs were of a dark mottled appearance. Left lung of a dark buff color, and highly congested,—right lung extremely dark and gorged with grumous black blood; heart appeared of a natural size,—both right and left ventricle contained about two ounces of coagulated black blood, both ventricles were also distended with the same impure blood, particularly the right; kidney was pale and bloodless, bladder entirely empty,

and contracted to a great degree. A number of gangrenous patches in the lining membrane of bladder.

Post Mortem Temperature.—Apartment, 58 Fahrenheit.

Temperature of the Body.—Half-past three o'clock, 82—half past 4, 90—5, 92—6, 96—half-past 6, 96—7, 90.

Second Case.

Walter Howeiston was admitted into Vennel Hospital on the 21st March, at half past nine, A. M. in a complete state of collapse, and died at two, P. M. the same day, after energetic treatment by enemata, calomel, opium, and latterly, a tobacco injection.

Examination after death.—Lungs seemed healthy; heart of usual size, and contained two or three ounces of grumous blood in each auricle; liver paler than natural; gall bladder full of bile, and easily discharged; spleen healthy; stomach contained a great quantity of fluid resembling dish water. Towards the pylorus, in the inner membrane of the stomach, there were several patches, approaching to gangrene; duodenum much injected; much glary fluid adhering to the whole inner coat of the bowels; kidneys pale, and the left contained pus; bladder firmly contracted; no urine; gangrenous patches at the fundus of the stomach; did not examine the brain.

Third Case.

Robert Forfar, ætatis 12, idiot. Epilepsy since 3 years old. Was in the habit of eating coals and any other dirt. Had purging three days previous to attack. Was seized on Sunday morning, Jan. 22, at 3 o'clock, with both vomiting and purging, but no cramps. Visited at 12 o'clock—found the patient laboring under

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well marked symptoms of cholera, and quite cold. Enema of warm starch, one pound, tincture of opium three drachms.

Monday.—Much in the same state, though he looked better. Still cold, but not so livid. Continue medicine and hot applications.

Tuesday.—Continued in same state until 4 P. M., when the surface of his body became warmer, which continued until his death, which took place at 9 P. M. The patient was warmer two hours before his death, than he was two days before. Had a purging enema at 2 o'clock this day, which produced a bilious stool, with a long round worm in it. No urine was secreted or voided since three o'clock on Sunday morning.

Examination of Robert Forfar's body, 25th Jan. 1832.—Sixteen hours dead. No offensive odor. The surface of the body leaden hue. Belly hollow. Reddish ecchymosis of the limbs. Pupil nearly natural. No difference in the color of the muscles or fat. On laying back the sternum the internal mammary artery and veins were displayed. The blood in the artery certainly lighter red than in the vein, not more turbid than natural. Very collapsed lungs. No fluid in the chest. Upper surface of the liver darker than natural, but posterior natural. Gall bladder very turgid. All the bowels much injected with blood except the colon. The Neurilema of the pneumogastric nerves bright red and injected. Right side of the heart relaxed, left contracted. Spleen natural. The injection of the intestines is very minute, exceedingly distinct and arborescent. Some grumous blood in the right ventricle. There is also some blood in the left ventricle, which is more coagulated.

Internal texture of the liver natural. Blood in the stomach dark brown, the villi injected, (and Mr. Earle of London, who is present, says that in some parts of the stomach it is exactly like the stomachs of those who die of hydrophobia,) corrugated in a peculiar way, more particularly about the rugæ. This dark fluid adheres tenaciously to the coats of the stomach, and through the whole line of the intestines, except the colon. At the commencement of the jegunum an indurated superficial ulcer, size of a sixpence. About half a table-spoonful of urine in bladder. Several large dead lumbrici. Kidney natural, but darkish.

Chemical examination of Urine taken from the bladder on Wednesday, during the post mortem examination.—Was acid, and if it contained urea at all, it contained it in a very minute quantity.

Examination of the Bile. Ten grains dried at a heat of 140, calcined, left one grain. Distilled water poured on this and heated, slightly restored reddened litmus.

Blood.—A quantity of blood was collected from the heart. It was gelatinous, but the greater part appeared to have remained fluid. The whole collected was dried at a heat of 140. The mass after exsiccation weighed 200 grains, which, by exposure in a crucible to a red heat for two hours, was reduced to two grains. Boiling distilled water was poured on these, till nothing more was dissolved. The insoluble mass weighed one and three-fourth grains. Hence 200 grains of this blood dried at 140, only contained one fourth grain of salts soluble in water. These consisted of an alkaline carbonate, muriate and sulphate of soda. The following experiments

with this aqueous solution show—1st, Turmeric paper was not reddened, but the blue color of litmus reddened by an acid was very gradually restored. 2d, Muriate of silver, a copious precipitate, insoluble in nitric acid. 3d, Nitrate of barytes, a copious precipitate, insoluble in nitric acid.

A young friend who accompanied me to Newcastle, and who has been for several years much engaged in the investigations of animal chemistry, has communicated to me the following as the result of his inquiries :—

1st, In the fluid vomited which you brought from Newburn, there was neither free acid nor free alkali, nor albumen. It, however, contained a peculiar animal matter, for when it was slowly evaporated at a low heat, a yellowish brown extract remained, resembling in appearance that of urine. Its chemical properties were, however, wholly dissimilar, as it contained no urea, or matter capable of causing a precipitate with the tincture of galls.

2d, The alkaline muriates and phosphates appeared to be present in the clear fluid. The insoluble rice-looking matter was not sufficiently examined to speak with confidence of its nature. Blood taken from the heart of a blue collapse patient was not materially altered in any of its chemical properties. It reddened by immersion in saline solutions immediately, but scarcely at all by exposure to the air. This has been the case with the blood I have examined in three other bad cases of the disease. The saline matter of the blood appeared, by examination, to be greatly diminished in quantity.

The bile appeared wholly unchanged in its chem-

ical properties. Its physical properties were also the same as usual.

The child's dejection, sent to you by Mr. Frost, consisted of a dilute solution of albumen. It reddened turmeric paper strongly. Solution of the by-chloride of mercury dropped into it, and the mixture heated, a copious precipitate fell. The same result obtained with nitric and muriatic acids in a slighter degree. These remarks only apply to the fluid part of it. The rice-like sediment was not examined.

P. S.—The Gall duct of Forfar's case was found completely impervious.

Fourth Case.

From the Case-Book of Vennel Hospital.

Feb. 1832. Malcolm M'Millan, aged 13, employed constantly in his father's pilot boat, was brought to the Hospital in a state of collapse. His extremities cold and blue; no pulsation to be felt at the wrist, temples, or carotids; face and lips very cold; countenance dull; eyes suffused; eyelids sluggish; tongue soft, clean, cold; voice very feeble, and said by his friends to be completely altered; is rational and drowsy; complains of pain at and below the navel, which is not increased on pressure. Half-past three. Has had an evacuation of about three ounces, of a light brown colored fluid, resembling boiled oatmeal gruel, and of a slightly feculent smell. Four o'clock. Apply a mustard poultice to feet; has more heat in his body and extremities; pulse perceptible at the wrist, 108; has some thirst; to have four grains of calomel, and a small quantity of brandy and water. Quarter past five. Symptoms much the same:

repeat the calomel. Six o'clock. Pulse imperceptible; had a little brandy and water. Quarter to seven. Pulse perceptible; repeat the calomel. Half past seven. Pulse very feeble, 116; delirious. Half past eight. Repeat the calomel. Nine, P. M. Pulse imperceptible; skin colder; face pale; eyes more sunken; repeated the brandy and water; injected an enema of three pounds of water, as hot as the hand could bear, to which add an ounce and half of spirits of wine. Ten, P. M. Face bedewed with cold clammy perspiration; pulse still imperceptible; extremities warmer; has retained the enema; repeated calomel and diluted alcohol. Eleven. Withdrew the enema and injected another, with three pounds of water and two ounces of brandy, and one drachm of laudanum. Twelve. Continue medicine; pulse 134. Half-past twelve. Pulse imperceptible; extremities rather cold; eyes suffused. Dr. Kirk now pronounces the case incurable, from the state in which he finds the brain. One, A. M. Reparations 34 in a minute, oppressed; pulse imperceptible at carotid; chest laboring; heat not increased; much low moaning, of the most piteous description. Had two drachms of alcohol in a little cold water a few minutes since. Quarter past one. Countenance is indescribably dark, sunk and cadaverous; no evacuations or vomiting. Twenty minutes past one. Breathed his last.

Examination of M. M'Millan's body Twelve Hours after Death.—Ecchymosis of the lower limbs and outside of arms; abdominal viscera immensely injected, as in high inflammation; lungs collapsed; blood fluid; coagulable lymph filling the whole right ventricle as a polypus, and a small polypus in the

left; the various ganglia highly injected and reddened: bladder empty, corrugated, and injected; internal membrane of the bladder highly injected, like acute inflammation; heat of the apartment 58; thermometer in the bowels 89; internal membrane of bowels injected highly; glary matter like dirty mucous lining the whole cavity of the stomach and ileum; spleen turgid; considerable quantities of pus in pelvis of kidney, and whole substance containing more blood than natural; gall bladder distended; the longitudinal sinus of the brain containing in its whole length a polypus, like a white worm, very firm in texture; membrane of brain highly injected.

Post Mortem Temperature of the Skin.—Half-past 1 o'clock, 92—2, 92—half-past 2, 96—3, half-past 3, 96—4, 90.

In Canada and the United States, the results of Post Mortem examinations have been no more uniform and satisfactory than those furnished from India and Europe, but for further details respecting the cholera in this country the reader is referred to the appendix to this work.

TREATMENT OF THE CHOLERA.

Notwithstanding the prevalence of this disease year after year in various parts of Asia, we yet find that no fixed plan of treatment has been adopted or discovered in that country. In India the treatment of the cholera has been altogether empirical. Numerous remedies were proposed, administered, commended and condemned.

There is scarcely a remedy or medicine that can be thought of, or imagined, that was not tried in some of the towns in India, where the cholera prevailed. Among the principal remedies, were bloodletting, calomel in large doses, opium in a great variety of forms and in great and small quantities, and by injection ; ether, camphor, musk, castor, aromatic and stimulating tinctures, essential oils of peppermint, clove, cinnamon ; wine, ardent spirits, external heat, warm bath, and hot bath, to blister the extremities ; vapor bath, heated sand, friction with irritating rubefacients, blisters, the actual cautery applied near the spine, and to the limbs, emetics, purgatives, galvanism, electricity, cold bath, &c. &c. &c.

In the onset of the disease bloodletting was generally considered useful, but for the most part it was serviceable only in the first stage of the disease, though some few instances are given in which bloodletting performed at an advanced period of the disease proved beneficial.

Calomel was very greatly administered in India in cases of cholera, and its efficacy very generally ac-

knowledged; but we know that the mortality of the disease was exceedingly great in that part of the world, although nearly all the physicians gave calomel to their patients.

Opium was also employed to a great extent; and under the use of it many died, and some recovered; and the same may be said of the efficacy of most of the remedies resorted to.

When we pass from Asia to Europe, and inquire respecting the treatment of cholera, in a northern climate, we find the same remedies resorted to, that where used in India, with some few additional ones, proposed and employed by European physicians, but all with nearly like success to those that had been formerly used.

Calomel has not however been so largely employed in Europe as in India.

In Russia, Poland and some other places, the extracts of hyoscyamus and cicuta were administered, and it is said with remarkable success.

The distilled water of cherry-laurel, and the distilled water of bitter almonds, were said to have been of service in many cases.

Tobacco injections have been highly recommended and many cases of cholera have been cured by the use of them.

The sub-nitrate of bismuth was for a while highly recommended and reported to have cured many.

Cinchona, serpentaria, capsicum, and various other tonics and stimulants, separate and combined, were proposed and administered, and in many instances seemed to be beneficial; but we all know that the mortality of the disease has been great in all countries, and consequently we may feel assured that

no remedies have as yet been resorted to which have generally proved serviceable, or that have not failed in innumerable instances.

The deaths are most numerous in proportion to the number of those attacked, at the commencement of the epidemic cholera, in a place where it has not before prevailed. This may be owing either to the greater violence of the disease at first, or to the want of care and proper treatment, which are always witnessed on the sudden invasion of a malignant epidemic.

It would seem however that the cause or causes that produce the disease are more violent at first; and after a short time the disease is observed to become more mild and manageable. Remedies appear to have more control over it, and the hope is then entertained that the method of treatment adopted has lessened the mortality and triumphed over the disease; and that if it was to recur it would be disarmed of its terrors by the remedies which have at last been discovered.

But all such hopes are sure to be blasted on a recurrence of the disease, or on trial of the same remedies in other places at the commencement of the epidemic.

In Germany and France and in this country, *ice* and cold water have been administered, and frequently with most happy effects, snatching the patient as it were, from the grave.

But this remedy has also failed in innumerable instances; I have seen it administered, and have considerable confidence in it as a remedy, but I have also seen it of no further use than to afford a very short lived

gratification to those whose only want when dying was to have their thirst assuaged, and whose

"Burning mouth impel'd to crave
One drop—the last—to cool it for the grave."

Leeches, and cupping glasses, applied over the stomach and bowels, have many times proved serviceable, especially in the early stage of the disease.

Colchicum has also been given in this disease, and it is said with benefit.

M. Coster of Paris, administered large quantities of oxygen gas to patients in cholera. A mixture of three fourths oxygen and one fourth atmospheric air, was the composition he made use of, and he says great relief was given in all cases, and many cures were effected by the use of it. Others have had recourse to it, and have not had like success.

The nitrous oxyde gas or exhilarating gas has been administered in Europe and this country in cases of cholera, but I am not aware that it has been of service.

M. Biett of Paris, administered with much benefit *animal charcoal* in cases of cholera; this remedy has been greatly used by M. Recamier, at the Hotel Dieu, under the name of *black magnesia*.

Owing to some analyses of the blood of patients affected with the cholera, and which showed a deficiency of the watery and albuminous portions, and also a deficiency of the muriate of soda and potassa, &c. injection of these ingredients into the veins has been resorted to, and several patients have apparently been cured by this process; the particulars of which are detailed in another part of this work.

But I will not further particularise the various remedies that have been employed, to subdue this ma-

lignant and terrific epidemic; but proceed in accordance with the general plan of this work, to select from various and experienced authors in the different countries where the cholera has prevailed, some account of the remedies they have used, and which they have found on trial to be beneficial.

It has been exceedingly unfortunate, that in most of the countries where the cholera has prevailed, that some specific, or universal antidote for the disease has been sought for, as if the cholera was not only always of the same nature, but of the same degree of violence, affected the same organs and disturbed the same functions in all cases; and in all cases required the same treatment.

On this subject the following remarks from the New York *Cholera Bulletin* are deserving of consideration:

"We are on debateable ground, with a host of champions to encounter, arrayed in various style, from the armories of ancient observation and modern experience. The profession is indeed in the field in motley garb to slaughter the monster of Epidemy; but the members of it agree not on the mode of destruction, and in the warmth of argument, and fury of debate, turn many of the weapons that should be directed against the enemy, towards their fellow "filii Esculapii."—Alas! then, for the public, for whom Doctors and Cholera are contending; they watch the fierce onslaught, and ever and anon are struck by the random blows that proceed from the combatants. Yes! for 'Cholera kills, and Doctors slay, and every foe will have its way!'

Let us view the medical army! In the foremost

rank stand the Bleeders, then advance the Calomel Band, escorted by a troop of Opium foragers ; here is a company of Stimulators, and there a Tobacco brigade ; here a file of Saline Aperients, and there again a guard of Leechers and Blisterers. The men of friction are in the van, and the rear is composed of the Icy legion. All these characters appear in the force raised to subdue the cholera, and by such a medley is the fell disease of Asia assailed.

It may not be denied that in many instances, men are firmly wedded to an opinion, founded upon a successful report ; for instance, with few exceptions we know little of the nature of cholera upon this continent, but what we have learnt from the writings of others in the situations where the demon malady yearly demanded a hecatomb for sacrifice ; it was therefore very natural that the fond enthusiast should lend his attention to the well told and promising tale, that after pourtraying the sad miseries of the disease, should describe its cure, and under circumstances that belied hope, and attracted disappointment ; of such tales there have been many, and surely there has been no want of listeners : the wildest theories have gained proselytes, the strangest romance has won a credenee, and what has been wildly described, has been servilely imitated by the Physicians at a distance, who were thus improperly prepared to treat a pestilence, should it unfortunately visit the scene of their exertions.

It is of course then said by some that the lancet will effect a cure, that calomel singly, or combined with opium is a specific ; that stimulants will restore the depressed, or tobacco will weaken the fiercest action ; that saline aperients will act successfully

through the circulation, that friction will stay the spasm, or that ice will moderate the accompanying fever. Now however valuable all or any of these remedies may prove, if accepted exclusive of other treatment in every case, they will destroy more frequently than they can save: there are shades in cholera as in all other diseases—time for action is demanded, time for repose is required: the available means suggested by medical skill are not invariable, either in the time or manner of their application, and however clearly the essentials of the disease may be evidenced, there are yet circumstances to be furthered or modified, that attach an apparently new character to it, and render the physician the servant instead of the controller of events.

The remedies to which we have alluded have probably cured many patients laboring under cholera; in fact we have unquestionable testimony from the physicians in India and Europe of their value—what objection then can be raised to their employment? None but their indiscriminate use! If, as is surely the fact, scarcely two persons have suffered in cholera under the same identical symptoms, as if in addition, what is as surely true, that no two systems ever exactly corresponded in power or peculiarity, each attempt to bring a variety of cases within the same remedial treatment is likely to be as injurious to the patients as it is absolutely ridiculous on the part of the practitioners. We have heard that some medical men regard cholera in one light, and some in another: with one it is simply a "disease of excitement," with a second, it is marked by congestion in its earliest stage, and with a third, the nervous function is primarily attacked, rapidly inducing a cessa-

tion of the accustomed secretions. As one of these causes is always considered in operation, one plan of treatment is as regularly brought into play: a hot skin, a frequent and bounding pulse, a coated tongue, the utmost anxiety and restlessness, are regarded and treated the same, as when a cold surface, a weak and *tremulous* pulse, a chilled tongue, and a state of coma are apparent: whatever the theory may be, the practice is the same in various stages and degrees, sometimes perhaps to the salvation, sometimes, alas! to the destruction of the patient. We have moreover heard of confusion between the states of congestion in its most considerable extent, and exhaustion in its lowest condition, when stimulants and sedatives have exchanged the places they were intended to fill.

Is there then a difficulty in the treatment of cholera? We think not! A close observance of prevailing symptoms will ever tell to the intelligent physician the amount of danger, and the quarter in which it may be apprehended: whether the danger be general or local (for these distinctions may with propriety be drawn,) there are means within his power for their abatement, in the majority of cases where his aid is promptly demanded: such a physician will advance to the bed side of his patient with a mind well stored with the observations of others on the character of the disease, but yet untrameled by any specious reasonings: he will investigate, as far as may be, the history of his case, and endeavor to detect the cause and the attendant circumstances of its appearance. Gifted with sound common sense, that rare but inestimable quality, and possessed of a corresponding medical knowledge, he applies the resources at his

command according to the necessity existing, and triumphs when many fail, and only fails when none may triumph.

Without refraining from the use of each recommended measure, when prudence demands its employment, he yet avoids its abuse, and wisely selects from the experience of others, that which confirms his own.

We may therefore regard cholera in the same point of view as any other disease; it is almost needless to pronounce it specific in its character, for what disease is not? And it therefore becomes the physician to conduct himself in the treatment of cholera as in other maladies, where symptoms are watched and abated, and where each remedy is proposed with a rational expectation of success, so far as medicine can ensure an auspicious result.

The lancet therefore is useful; so is calomel, opium, tobacco, with the whole of the list so frequently talked of, and so frequently admitted in practice; the sole difficulty is when to direct their power against one of the fiercest diseases that has ever oppressed mankind, and this is a difficulty that must be submitted to professional skill for solution."

TREATMENT OF THE EPIDEMIC CHOLERA IN INDIA.

One of the earliest accounts we have of this disease is contained in a letter from Frederick Corbyn, Esq. assistant surgeon in the Bengal establishment, to Sir Gilbert Blane, Bart. physician to the King of England. This letter is dated at Sauger, September 7th, 1819, and the following remarks respecting the

treatment of the cholera are extracted from that letter, as published in the Medico Chirurgical Transactions for 1820. After describing the progress and symptoms of the disease, Mr. Corbyn says,

"It now affords me particular pleasure, as it will be highly gratifying to you, to turn from the melancholy scene I have just described, and inform you that the treatment I have hitherto followed, and which the Marquis of Hastings, whose great anxiety on the subject cannot be enough admired and commended, did me the honor to have published in general orders and circulated in the army throughout India, has proved eminently successful. I shall now quote the authority of others for the excellence of the remedies which I found so decidedly and invariably successful in my own practice, and it is gratifying to me to reflect, that through the promulgation and general adoption of them, an incalculable number of lives has been saved.

The outline of the treatment alluded to, is, to administer twenty grains of calomel (in powder, not in pills) and to wash it down with sixty drops of laudanum, and twenty drops of oil of peppermint in two ounces of water, to bleed freely in the early stage, and to support the warmth by external heat, the hot bath and hot friction, and internally by cordials.

The first report is dated Seroor, the 22d of July, 1818, by Mr. Assistant Surgeon Wallace. He remarks, 'The disease is most formidable. We have found the large doses of calomel, oil of peppermint and laudanum, generally succeed in checking the purging and vomiting. But the most formidable symptoms are the sudden debility and coldness, which seem to indicate the use of the most powerful stimu-

lants. The hot bath has been found very useful.' This gentleman's third report states as follows; 'I believe Mr. Corbyn's practice to be very efficacious when adopted early. The majority of cases did not apply for relief until they had been attacked for some hours, and the medicines were almost invariably rejected in common with every other liquid. I determined to administer the medicine in another form, and rubbed up two grains of soft opium, with fifteen grains of calomel, and about two drachms of honey. This was gradually swallowed, being dropt into the patient's mouth by the finger. After this he was placed in the hot bath, and small quantities of hot arrack and water mixed with spices and sugar given to drink. The patient commonly fell asleep, and in favorable cases, awoke free from danger. In others, the coldness and spasms recurred, when recourse was again had to the hot bath, and opium administered in various forms. Twenty-two cases only were admitted yesterday, and all of them except two have recovered.'

Dr. G. Burrill, surgeon of the 65th regiment, dates his report at Seroor, 27th July, 1818, and makes the following return. It broke out on the 18th inst.

Admitted 21st	1	
22d	6	
23d	6	
24th	18	
25th	22	
26th	7	
	60	Died, 4.

'On admission, I bled in every instance, in general, to a good extent. Where universal spasm existed, venesection was carried *ad deliquium*, and the patient was at the same time put into a hot bath of 110°. The spasms were, by these means, invariably relieved, nausea and vomiting alleviated, so that the stomach bore the exhibition of calomel in scruple doses, combined with laudanum, which doses were frequently repeated; in short, the opium was given under every denomination, with calomel, and I believe the calomel will be found to rest on most stomachs *per se*.

The next report is from Mr. Surgeon Whyte, dated Seroor, the 28th of July, 1818. He states, 'The practice I had followed was that first recommended by Johnson*, and since by Mr. Corbyn, in which the corner stone and sheet anchor is calomel, in a dose of fifteen or twenty grains of the former, to an adult, according to his strength.'

We now come to that of Mr. Assistant Surgeon Daws. His letter is directed to Dr. Jukes at Tannah, dated at Aurangabad, 29th of July, 1818. He remarks as follows: 'I presume you have seen the letter written by Mr. Corbyn, who had charge of the Native Hospital, centre division of the army, at Eritch, to Captain Franklyn, Assistant Quarter Master General of the same division. On this subject I could not perhaps do better than recommend you to pursue the plan of treatment therein laid down, as it is the same, with very little variation, that I have

* In his work on the influence of tropical climates on European constitutions, where he quotes the case of a seaman who had swallowed a scruple of calomel.

adopted, and you will be glad to hear that the success of my own practice tends to corroborate it.'

The next report is from Mr. Surgeon Craw, dated Seroor, 30th July, 1818. He observes; 'The calomel and laudanum plan, with most diffusible *stimuli*, and the hot bath, have been eminently successful; and if application is made within four or six hours from the first appearance of the disease, the cure is almost certainly effected.' In another place he remarks, that a bleeding *quoad vires*, the calomel and opiate, the hot bath, warm clothing, and frictions, spiritous or anodyne, form the chain of treatment in the European Hospitals here, and these are repeated again and again as the symptoms may seem to demand. Under this plan, and an early application for relief, I think the disease is not fatal in more than one in a hundred cases. The following report is from Assistant Surgeon Campbell of the 22d dragoons, dated from Seroor. 'The scruple dose of calomel with Corbyn's anodyne draught was given every two hours, but when the spasms and vomiting had ceased, the laudanum was omitted, the calomel continued, and the stimulants more frequently given.'

The next report is from Mr. Assistant Surgeon Tod, dated Camp Chumargoody, Aug. 8, 1818. 'The way I have administered medicine is by giving calomel, one scruple, and washing it down with *tinctura opii*, one drachm, and water, two ounces, and repeating them after an hour, if the first dose is rejected. I have sometimes left the interval of an hour, which generally succeeds; but I have, in a few instances, been under the necessity of giving it three or four times.' In another place, this gentleman adds, 'I have had altogether an hundred cases where the cal-

omel and opium plan has been followed, and though ten or twelve have died, these were either such aged subjects that no rational hope of recovery could be entertained, or were brought in at such an advanced stage of the complaint, as to be beyond the power of medicine.'

Mr. Assistant Surgeon Milwood writes the next report, which is dated Ahmednugger, 2d August, 1818. 'I will now give my treatment, with my reason for the addition I have made to Mr. Corbyn's. There are two great objects to be attained for the recovery of the patient. 1st, to allay the vomiting and purging;—2ndly, to restore the pulse and heat of the extremities and produce sleep. In order to effect these, I have, in addition to one scruple of calomel, put five grains of antimonial powder, and added to the draught one drachm of spt. æther. nitros. In the course of two hours, I give ten grains of calomel and five of antimonial powder, with half the draught which I prepare with camphor mixture, in place of plain water, and repeat this as it is required. The best laxative I have found to be carbonate of magnesia, four scruples. It remains on the stomach, and generally causes two or three plentiful evacuations.'

Mr. Assistant Surgeon Richards reports as follows. Punderpoor, 3d of August, 1818. 'Up to this morning the admissions amount to 170; out of which eight casualties have occurred.' This gentleman bled and used the calomel and laudanum doses.

To evince how essentially necessary bleeding is, Dr. Burrell sends the following return:—

Bled	88	Died	2
Not bled	12	"	8
Total admitted,	100	Died	10

I now come to Mr. Surgeon Longdill's report, dated Seroor, 17th of August, 1818. 'My general plan of treatment was to give the dose recommended by Mr. Corbyn. If it was rejected, another was given, after waiting an hour, with the warm bath, which generally relieves the patients; after which they required little else but cordials and a gentle laxative.'

Mr. Surgeon Robertson, of the European Regiment, on the Bombay establishment, dates his report from Keerky, and states that bleeding relieved them, and that calomel and opium brought them quite round.

The report which succeeds is from Mr. Surgeon Gordon, dated Satara, 5th September, 1818. 'I sent you a report in which I stated that I laid considerable stress on free and early blood-letting. Since then, I have had eleven cases, bled the whole of them, then opened the bowels, and they are all quite well.'

Mr. Surgeon Coats reports to the President of the Medical Board, that 'the practice followed in the medical treatment of this disease at Aurangabad was that recommended by Mr. Corbyn, and had been particularly successful; indeed, if the patient applied in time, it was considered as infallible.'

Mr. Surgeon Jukes next reports, that 'experience has now taught us that a very large proportion of those attacked by the disease, recover by the calomel and laudanum alone; but I feel satisfied that there are many aggravated cases wherein nothing but

the most prompt and decided use of the lancet could possibly save the patient.'

The next report comes from Dr. Taylor, a gentleman who had the principal practice in the disease at Bombay. This practice is precisely similar to the foregoing; he gives the following return:—

Medicine administered to	7,459
Of whom died	441

being a proportion of nearly six to an hundred.

The last report is from Geo. Ogilvy, Esq. Secretary to the Medical Board, confirming the treatment already mentioned, and the reports are concluded with the following abstract of cases which occurred in the island of Bombay.

1817.	Cases.	Deaths.
August	4400	456
September	4804	287
October	2411	146
November	824	44
December	806	64
1819.		
January	889	114
February	517	27
	14651	1138

Proportion of deaths in those cases in which medicine was administered, 6.6 per cent. In the same space of time 1294 cases were reported by the police, in none of which, medicine was administered, and it is a most important remark by Mr. Ogilvy, Secretary to the Medical Board, that it was not ascertained

that any case had recovered in which medicine had not been administered.

The population may amount to between 200,000 and 220,000. The number of ascertained cases was 15,945, which gives the proportion of the attacks of the disease to the population, $7\frac{1}{2}$ per cent.

I believe I have now satisfactorily proved to you the efficacy of the treatment I recommended. I shall add the remarks of the Medical Board of Bombay, made after summing up the whole of the opinions regarding the proper mode of treatment to be adopted.

'On the subject of the cure of the disease, we need say but little. The practice so judiciously and speedily adopted by Dr. Burrell in the 65th regiment, clearly proves, that in the commencement of the disease in Europeans, blood-letting is the sheet-anchor of successful practice, and perhaps also with the natives; in this I have entirely concurred in my printed report. but have there said nothing of this practice among the natives. I tried bleeding with the natives, but could get no blood from the arm, and finding every efficacy from the medicine I prescribed, I had no occasion to make a second attempt; but I have no doubt you will perceive, from the principles on which I ground the cure, that the venesection is advisable in all cases where blood can be obtained;' to proceed —'provided it can be had recourse to, sufficiently early in the disease, and as long as the vital powers remain so as to be able to produce a full stream, it ought never to be neglected, it being sufficiently proved that the debility so much complained of, is merely apparent. Calomel as a remedy certainly comes next in order, and when employed in proper doses with the assist-

ance of opium, more particularly in the early stage of the disease, seems to be equally effectual among the natives, as venesection among the Europeans, in arresting its progress. In all the cases formerly alluded to, when we met with the disease in its first attack, a single scruple of calomel with 60 minims of laudanum, and an ounce of castor oil seven or eight hours afterwards, was sufficient to complete the cure. The practice of this place, as sufficiently appears from Dr. Taylor's report, bears ample testimony to the control which calomel possesses over this disease. All other remedies must in our opinion be considered as mere auxiliaries, no doubt extremely useful as such, and ought never to be neglected, particularly the warm bath and stimulating frictions.'

I trust, Sir, I have now performed my duty in giving you a full and accurate account of the nature and treatment of this alarming epidemic. I am still accumulating information, but in the mean time, as my object is utility and not emolument, I beg you will give publicity to this letter, by procuring the insertion of it in that excellent work, the Transactions of the Medico-Chirurgical Society.

I am, my dear Sir,
Your very obedient Servant,
FREDERICK CORBYN.

To Sir Gilbert Blane, Bart."

Several years after the above was written, the Madras Medical Board published an account of the epidemic cholera, as it appeared in the territories subject to the Presidency of Fort St. George.

This report was drawn up by William Scot, surgeon and secretary to the Board, and the following

remarks respecting the treatment of the disease are extracted from that report. The accompanying remarks are from the Medico Chirurgical Review for 1825.

"In no disease has the sovereign efficacy of numerous specifics been more vaunted—in none have they been more frequently inefficient, than in cholera. While the general tendency of the disease was almost invariably towards a fatal termination, there was yet a certain stage, at which its progress might, in very many instances, be arrested by the most opposite, and sometimes by the most trifling remedies. The earliest movements in cholera, especially as it first manifested itself, were generally confined to irritation of the stomach and bowels—' and in this stage it is unquestionable that the mere exhibition of an anodyne, a cordial, or an antispasmodic medicine was sufficient, in numberless instances, to stop the progress of the disease, and to effect a cure.' After the first epidemic sweep, however, of the cholera, it was universally acknowledged by practitioners, that the remedies so successful in their former practice, were almost totally unavailing in the subsequent visitations.

Opium. No medicine has been so universally used as this, and none, perhaps, has so generally retained its reputation. It was more successful, however, among the natives than among the Europeans, from their greater susceptibility to the action of medicines.

' While, as an anodyne and antispasmodic, the efficacy of opium in the cure of cholera has been proved by experience to be great, it is painful to be

obliged to acknowledge, that in many apparently promising cases, where even its narcotic effect was evident, it had no ultimate effect in warding off a fatal termination; and in the advanced stages of the disease, whether it was first exhibited at that period, or whether its use may have been begun earlier, and then continued, its efficacy in restoring the depressed or suspended functions, like that of all other remedies, is extremely uncertain. Those cases may, with most confidence, be chiefly trusted to the effect of opium, in which the primary symptoms are seated, apparently, in the stomach, as indicated by vomiting, and spasmodic pain in that region; and in the intestines, as indicated by violent purging, and painful contractions of the abdomen. Its effects are more uncertain, where the affection of the stomach is obscure; where there is a moderate, but insidious purging; where there is great sense of heat in the epigastrium, and in every case where collapse has come on.' lv.

Passing over æther, ammonia, spirits, wine, and other diffusible stimuli, we come to—

Calomel. This was almost as universally given as opium, and as indiscriminately. It was administered for various indications, and with various views, according to the practitioner's opinions respecting the nature of the disease. Mr. Scot does not appear to be favorable, on the whole, to the administration of calomel, at least in the early stage of cholera.

'The success of those practitioners, who did not use calomel in the primary treatment of cholera, has been fully as great as that of those who did: while the arguments, distinctly brought forward by various medical officers against its *early exhibition*,

appear decisive against the observations which have been offered in support of the practice. Calomel has unquestionably a powerful effect in exciting the biliary system, and in this view, its exhibition is highly necessary: but the suppression of the excretion of bile being only a link in the common chain of symptoms, and its partial, or occasional removal, or even its total absence, having been proved to be of little consequence in the general course of the disease, to attempt to excite it by particular means, may be considered as premature and injudicious. Whenever a favorable change takes place, indicated by a renewal of the ordinary functions, then the exhibition of the appropriate stimulus seems to be clearly indicated, and not till then.' lvii.

Blood-letting. This remedy was first proposed by the editor of this Journal, from observing its effects in one or two sporadic cases of cholera in the island of Ceylon, more than twenty years ago. It will be seen, from the following extract, that it has been an important measure of late, in the treatment of this terrific malady.

'The abstraction of blood, unless as an anti-spasmodic, is a remedy so little indicated by the usual symptoms of cholera, that its employment in the cure of this fatal disease has afforded a signal triumph to the medical art. It requires no common effort of reasoning or reflection to arrive at the conclusion, that, when the powers of life appear depressed to the lowest degree, the pulsation of the heart all but extinct, the natural heat of the body gone, and the functions of the system suspended and incapable of being revived by the strongest stimulants, the abstraction of blood might yet prove a remedy against a train of

symptoms so desperate. Bleeding was, no doubt, first employed in cases where there was much spasm, and where the powers of the system had not much declined: the relief was generally obvious and immediate, and the practice in such instances was thus established. Dissections having frequently shown a loaded state of the vessels of the viscera, and apparent inflammation of their mucous membranes, venesection was also adopted to obviate these conditions, and naturally enough: but the employment of blood-letting, without reference to either of these states, and as a remedy for collapse in cholera, must have been the result of reasoning and reflection, founded on the general principles of the science; a result highly honorable to the profession; and, as we shall endeavor to show, of the utmost practical importance in the cure of the disease.

'We have no precise information regarding the manner in which venesection was performed in general; although, in such a disease, this seems a matter of very considerable consequence. It is remarkable, that in a disease like cholera, syncope should be so rare a symptom. When it is brought on by venesection, it is generally favorable, which may most probably be imputed to its being employed during violent spasm, and before any sinking has taken place. We can then readily understand, that the free evacuations of blood, which may be supposed to precede the syncope, as well as that state of relaxation itself, will be followed by amendment: but there is no information, which can lead us to believe, that syncope has often followed the abstraction of *small* quantities of blood, or that success had followed small bleedings. The usual expression is, that after

a scanty discharge of blood, it ceased to flow, and that depression of pulse, with *faintness*, not *syncope*, came on, or was increased. We are not informed, whether bleeding has been generally performed in the recumbent, or half erect posture. It is evident from the reports, that the mere act of elevating the body has been followed by faintness and even death: and if venesection has been often attempted in the half erect posture, we may thence account in some measure, for the frequent want of success in obtaining blood.

'Few remedies, on a fair trial, have been more generally and unequivocally advocated than free blood-letting; and the most that has been urged against it is, that it is not always successful. The advocates for bleeding proceed, however, on the principle, that a certain quantity of blood is to be obtained, in order to ensure success, which few of them estimate at less than about 30 ounces. Those who are disposed, either less favorably towards bleeding, or to condemn it altogether, object, that if the circulation is in a condition to admit of free bleeding, the case is a mild or favorable one, and would probably yield to other remedies. There is no doubt, that fatal collapse has sometimes suddenly followed, even *large* bleedings, which has staggered the faith of many practitioners in the general safety of the remedy; but in the great majority of cases, it is after *small* bleedings that this has happened. There is the most ample evidence also, that cases, especially in Europeans, even under the most favorable appearances, will often, in spite of all internal and external remedies, go on to a fatal issue, when bleeding is not practised.

'The cause of collapse coming on after, or during bleeding, in cases of cholera, may perhaps be explained, so as to obviate the objections thence arising against it as a remedy in that disease. It seems unquestionable, that the evacuation of a small portion of blood, such for instance, as we might suppose to be yielded by the remoter branches of vessels, is followed by increased debility: but if we succeed in carrying on evacuation, till its effects reach the internal vessels and the heart itself, then the circulating system seems to be freed from an oppression which impeded its functions, and it becomes equal to the task of propelling the mass of blood. This is a species of indirect excitement. The powers are not raised, but the resistance, or weight, is lessened. Such is the theory, which has been adduced in support of blood-letting in cholera. The reader will be aware, that it is not new; its application to the particular disease, of which we are now treating, being the only novelty. *If the theory be true, the presence or the supervention of collapse, so far from deterring us from going on, should only be regarded as additional reasons for renewing our efforts to get blood.*'

In proof of this, a great many testimonies are brought forward drawn from the journals of medical officers, after which Mr. Scot goes on thus:—

'Besides the very ample evidence, which will be found in the printed reports, in favor of blood-letting as a remedy in cholera, the opinions of the majority of medical officers whose observations are not inserted, are also decidedly in its favor. The objection chiefly urged, is not against the practice, but rests on the too frequent impracticability of procuring a sufficient quantity of blood. It is acknowledged, even by

the most zealous of its advocates, that this difficulty has often occurred, and proved insuperable. When, however, the operation is performed with the moral conviction, that, if successful in obtaining blood, the life of the patient will most probably be saved, the operator will presevere, undiscouraged, in his efforts: he will call in every suitable aid, such as frictions, bathing the arm in hot water, re-opening the orifices of the vessels, administering stimulants, and external warmth. He is not deterred and induced to desist by any intermediate accession of debility, or collapse; nor, is he tempted to rest satisfied with any temporary melioration of pulse; his object goes beyond the present moment, and he feels satisfied, that if he can fully unload the internal vessels, he will save his patient, and if he fails, that he will most probably lose him. It is not considered to be of much importance whether the patient may have been bled before or not, if his present symptoms indicate a repetition of the operation. The principle is, that collapse, in cholera, is not the consequence of the loss of blood, but is a condition which nothing but its abstraction can be trusted to for relieving. In the second case, however, when the medical man is not decided in his own mind, obstacles will be allowed to subdue his fortitude, and arguments will be then deduced to dissuade him from perseverance. A sudden aggravation of the symptoms of collapse will be regarded as an effect of a remedy, at least doubtful; or, a transient return of vascular action will be held, either as a sufficient advantage gained, or as an indication that bleeding is no longer required. It is thus we may account for a vast number of ineffectual, because undecided attempts at blood-letting; and for a vast

number of unsuccessful results, when the quantity abstracted falls short of that which is required: for the volume of the blood must be reduced in a given proportion, in order to secure the effects expected from it. Any thing short of this will only take away from the patient's strength, and not augment the motive powers of the circulating system; or what is the same thing, will not diminish the resistance to the motive powers.

'Cholera is unquestionably a very dangerous disease, and so many circumstances concur in aggravation of its natural fatality, that we can scarcely hope that any mode of treatment will ever be devised which shall strip it of its formidable character. Much injury has arisen, however, from remedies being brought forward, and tried, as if they were absolutely specific and infallible. And amongst others, bloodletting has been put to this most unjust, and unphilosophical test. If strictly considered, it would, perhaps, be the least of all entitled to the appellation of a specific remedy; for in truth, there is great reason to doubt, whether it be directly curative of the essential symptoms of cholera. Its warmest advocates only consider it as an auxiliary, and never trust to it, but in combination with other, and which indeed appear to be, the strictly appropriate remedies. Congestion, for which alone it is indicated, appears merely to be a symptom or consequence of that morbid state, which forms the first and highest link in the train of cholera actions. The removal of congestion, which is mechanical, allows the heart to respond to the action of the other remedies. Should it be objected, from a consideration of some dissections, that no particular congestion has taken place, the blood

appearing to be equally diffused over the vascular system; and that in some instances, the circulation, though ultimately affected, seems to retain its powers for a time, without material depression, yet, even in such cases, venesection, by lessening the volume of the blood, may still have beneficial effects. We should certainly apprehend no danger from it in cases of this description, used, *as it ought invariably to be, in conjunction with the other remedies.*' lxi.

These other remedies were principally antispasmodics and stimulants. Of the various means, internal and external, not yet enumerated, it is quite unnecessary to speak. Hot applications to the skin had far less effect than might have been expected, from the deadly coldness of the surface, and torpid state of the extreme vessels."

Mr. James Annesley, of the Madras Medical Establishment, and Surgeon of the Garrison and General Hospital, Madras, published in 1825, a Treatise on the epidemic cholera of the East, from which the following remarks respecting the treatment of the disease are taken:

"The following is the way in which this disease has usually been treated under my direction:—

A patient is admitted into the hospital, I shall say at noon, with all the symptoms of cholera; a vein is immediately opened, and one scruple of calomel and two grains of opium are given in the form of a pill, and washed down with the camphor draught. The body and extremities are well rubbed with dry flannels, made warm, and bottles filled with hot water are applied to the feet and hands; but if the spasms are severe, spirits of turpentine are used as an embroca-

tion. In an hour, we generally perceive the effects of these remedies, and whether the disease be in any degree arrested, or be proceeding in its progress. If the former, nothing more is to be done till evening, when the calomel pill may be repeated, and an enema exhibited. The following morning the bowels should be again fully evacuated, and then the patient may be considered safe.

When blood, however, cannot be drawn from the arm, and the spasms continue; when severe pain and burning heat are felt at the umbilicus and scrobiculus cordis, and are distressing; when the skin is cold, and deluged with cold clammy dew; and when there are oppression in the chest and difficulty of breathing —excessive pain and confusion about the head, with great intolerance of light—no pulse, or a pulse scarcely to be felt, and a cadaverous smell from the body, twenty or thirty leeches should be applied immediately to the umbilicus and scrobiculus cordis; the calomel pill should be repeated, and the turpentine embrocations continued. Leeches ought likewise to be applied to the temples and base of the scull.

When the leeches bleed freely, the application of them is always attended with decided advantage, and they should be allowed to remain till they have fulfilled their duty; after which, a large blister or sinapism should be applied over the whole abdomen. Sometimes the leeches fasten, but do not draw blood. In this case, they should be removed immediately, and the sinapism or blister applied in their place. When the bowels are very irritable, and constantly discharging a watery fluid, small anodyne enemas, with camphor, may be given; and the drogue amere, a nostrum used by the Jesuits, will be then found very use-

ful in assisting the operation of calomel, which latter should always be repeated every two hours, till three or four scruples have been taken.

Whenever we fail in checking the disease at first, we have no resource but to treat urgent symptoms, and they must always be met with decision as they occur. The patient ought never to be left a moment without an attendant who is capable of acting according to circumstances, and who may take advantage of every change."

The cholera appeared at Port Louis, Mauritius, in 1819 and 1820, and the following account of the treatment adopted at that place, is taken from a communication by Dr. Kinnis, published in the Edinburgh Medical and Surgical Journal for 1821.

"In the fatal form of the disease, the chief remedies employed, were blood-letting, the warm bath, spirituous and dry frictions, rubefacients, the internal exhibition of spirits, opium, calomel, Epsom salts, and other purgatives. The extraordinary success of Mr. Sheppard, in treating a similar disease by blood-letting to syncope, as reported in Dr. Johnson's work on tropical climates, induced me to practice it on the two first patients attacked; but from neither of them, though veins were opened in each arm, could more than twelve ounces of uncommonly dark blood be obtained. Mr. Markham tried it with no better success in two other cases. It was also tried, as we have seen, in some of the less violent affections; and, the impression produced on me by the whole is, that when only a few ounces can be obtained, their abstraction accelerates the fatal event, and when blood-

letting can be carried to syncope, the disease is curable without it.

Opium seemed, in many cases, to prevent the action of other remedies, by causing a torpor of the intestines; and the warm bath contributed to the same effect, by diverting the fluids to the external surface. The first, I think, ought never to be exhibited after vomiting has ceased; nor the second, unless the skin is dry and the cramps very severe.

The cold arising from their evaporation, appeared to counteract the stimulant effects of the spirits employed in friction; they were soon dropped altogether, and warm flannels substituted, particularly during the spasmodic paroxysm, but friction of no description ever obviously contributed to restore the natural warmth. Cataplasms of mustard, garlic, and capsicum, beat up into a mass, with spirits of hartshorn and vinegar, were suggested by Dr. Burke, and sometimes applied to the præcordia and extremities; but in one case only produced the smallest rubefacient effect.

At the commencement of the disease, spirits were very liberally administered, both in the form of draught and enema; most of the patients swallowed them with great reluctance, and rejected them immediately, even when combined with tincture of opium.

Though aware that calomel had been recommended in the cholera of India, the astonishing rapidity of its course prevented me from thinking of that medicine in the two first cases that occurred. Observing, however, that bile was absent in the egesta and in the alimentary canal of every patient I had seen; that one man, after overcoming the first symptoms, passed

nothing else; and lastly, that every other remedy had turned out either useless or prejudicial, I resolved to try calomel, and to throw it in with a precipitance which the nature of the disease seemed to justify, in the unhappy case already detailed. That patient was considered convalescent on the 6th December; and before the 14th of the same month, when the sanguine expectations I had been led to entertain of his recovery were exchanged for the bitter certainty of his approaching dissolution, five other cases had been admitted, and treated nearly in the same way. Two only were salivated and recovered; but one of these, alluded to in describing the symptoms, shared the fate of poor Reed, and died on the 12th day. The other took twelve scruples of calomel, of which probably a considerable quantity was vomited; his ptyalism was by no means severe; and he was discharged nine days after admission.

From all I had seen of the symptoms, and all I could find on dissection, it now appeared to me that mercury was the only known remedy on which any dependence could be placed; at the same time, that I had lamentably mistaken the proper mode of introducing it into the system. Instead of a scruple every two hours, I now gave that quantity on admission, and repeated it as often as rejected by vomiting; when one scruple had been retained, five grains were given every hour. Out of six cases, treated on this plan, two recovered, though in neither of them the mouth became affected.

The renewal of the secretion of bile, which is evidently suspended in this disease, I consider to be our grand object in the treatment; but the safest and most speedy method of accomplishing that object,

when it is possible, my limited experience does not enable me to point out.

Another desideratum in the treatment, is a method of suppressing vomiting, that would not interfere with the action of other remedies. Opium, calomel, and sulphuric acid, separately or combined, are inadequate to this effect; abstinence from liquid ingesta might perhaps answer, if one patient in twenty could submit to the torture of that privation.

Purgatives were generally exhibited by enema, soon after admission, and by draught, the moment there was any probability of their being retained. Sulphate of magnesia and the infusion of senna were preferred; but the cathartic tinctures, also, were very frequently administered in the form of enema.

Sometimes, immediately after recovery, the evacuations consisted of a deep grass-green fluid, of the consistence of a thin jelly.

Of the multiform, but less severe varieties, which the epidemic assumed, the simplicity of the treatment was only authorized by its unvarying success. Ten grains of calomel, or, when the vomiting was severe, a scruple, followed, at the distance of some hours, by an ounce of salts, with or without infusion of senna, and once or twice repeated, cured almost every case. Most of the instances, in which blood-letting was resorted to, have been given at length; we have seen that it seldom produced any decided relief until the bowels had been freely opened; and I am inclined to think it might always have been very safely dispensed with. When considerable debility and anorexia survived all the other symptoms, the patient used to be brought round, in a few days, by one of

the bitter infusions, mixed with a small proportion of the compound tincture of bark."

TREATMENT OF THE CHOLERA IN EUROPE.

When this disease first appeared in Europe, recourse was had to the publications from India, not only for an account of the disease, but for the treatment of it. And upon examination, we find nearly the same remedies have been employed in all countries. Blood-letting, opium, calomel, and external warmth, have every where been first resorted to, in attempting to subdue the disease.

Drs. Russell and Barry, agents of the British Government, and who witnessed the disease in Russia, thus allude to the treatment.

'Of the two great classes of functions performed by the organs of which man is composed, one only is attacked in this disease. The operations of the senses and of the intelligence are either left untouched, or are affected but in a secondary manner.

Those functions, on the contrary, by which existence as a living being is preserved,—those complicated powers, by means of which we are forever appropriating and converting into a part of ourselves, portions of the matter around us,—are all and at once deranged by the attack of this terrible malady. Nutrition is annihilated; respiration becomes difficult, irregular and inefficient; the involuntary muscles no longer perform their task; the voluntary are drawn into contractions by other powers than the will; the blood ceases to circulate; its physical properties are alter-

ed; its serous portion is suddenly thrown out upon the intestinal mucous surface of the body; the secretions are all arrested; and animal heat is no longer produced.

Under such rapidly destructive, and almost universal derangement of functions, the most energetic efforts should be directed to re-produce what the disease has rendered nature unable to keep up, viz.,

1st. Fluidity, heat, and motion in the blood.

2ndly. Regulated action in the voluntary and involuntary muscles.

Lastly, but above every other consideration, renewed energy in the nervous centre, the source of all vitality and function.

No remedy at all approaching to the nature of a specific has been as yet discovered for this disease. In fact, no one mode of cure can be usefully employed under all the circumstances of any disease. The grades of intensity, and the grouping of the symptoms with which spasmodic cholera makes its attacks, vary with the conditions of the subject; its treatment, therefore, must vary with these grades and conditions.

The leading preliminary symptoms generally are, either diarrhea, spasms, apoplectic vertigo, with nausea, imperfect vomiting, or various combinations of these symptoms.

When the diarrhea affords time for distinct treatment, it ought to be arrested at once by the most prompt and efficient measures; by opium in moderate doses; astringents; local bleeding by leeches, if the subject be plethoric; by cordials and sulphate of quinine, if there be cold sweats; by confining the patient strictly to bed, and keeping up heat; by diet; by emetics.

Should spasms be the first and leading symptom, subnitrate of bismuth, cupping along the course of the spine, cordial and antispasmodic medicines, opium, frictions, and dry warmth are indicated.

But when the patient is suddenly seized with vertigo, nausea, coldnesss, loss of pulse, blueness of the skin, shrinking of the features and extremities, with more or less watery discharges and cramps ; constituting an aggravated case of the worst type; whether this state shall have come on without warning, or shall have supervened upon either or both of the preliminary sets of symptoms already mentioned,time must not be wasted upon inert measures. Such a patient will inevitably perish, and within a few hours, if the paralysed vital functions be not quickly restored.

Let him then be immediately placed between warm blankets ; and should no medical person be at hand, let two table-spoons full of common kitchen salt, dissolved in six ounces of warm water, be given immediately, and at once if he be an adult. Let dry and steady heat be applied along the course of the spine, and to the pit of the stomach (if no other means be at hand) by a succession of heated plates or platters. Let the upper and lower extremities be surrounded with bags of heated bran, corn, ashes, or sand, and assiduously rubbed with a warm hand, and a little oil or grease to protect the skin. Energetic, complete vomiting will probably be produced by the salt; and perhaps bilious purging, with tenesmus.

Should a medical man be on the spot, a moderate bleeding, if it can be obtained, would be desirable, previously to, or immediately after the administration of the salt, or of any other emetic which may be preferred.

The extensively deranged action of those organs whose nerves are chiefly derived from, or connected with the spinal marrow, the anatomical characters found about that great source of vitality after death, in many cases of the disease, together with the success stated by Dr. Lang, chief physician at Cronstadt, to have attended the practice mentioned below, founded upon these views, in 12 out of 14 aggravated cases, fully justify the following recommendation.

In cases such as those just described, let the actual cautery be freely applied to one, two, or more places on either side of the spine, as if for the purpose of forming good sized issues. Should the heated iron have produced any excitement of the nervous power, and the salt emetic have caused any portion of the bile to flow through its proper duct, a great step will have been accomplished towards recovery from the stage of collapse. Cordials and opiates judiciously administered; sinapisms and other external stimulants; mercurials with mild aromatic aperients, which the intelligence and activity of British medical practitioners will not fail to adapt to the actual circumstances of each case, will conduct the patient safely to the stage of reaction.

The organs, during the collapse of this disease, probably owing to deficient vitality, often give no indication of having been acted upon by repeated doses of certain powerful medicines, which under other circumstances would have produced the most decided effects. It is therefore suggested that this temporary insensibility of the system should not inculcate the administration of such quantities as could, by accumulation, when the organs begin to recover their vitality, give rise to unfavorable results.

Thirst being a most distressing symptom in this disease, the quality and temperature of the drink should perhaps be left to the choice of the patient; but the quantity taken at a time should not exceed four ounces, and should be acidulated with nitrous acid, if the patient will bear it.

Should the disease prove extensively and rapidly epidemic in a large community, it would be prudent to establish stations at convenient distances from each other, where medical assistance and medicines might be procured without the risk of disappointment or delay. The details of these arrangements are left to the wisdom of local boards of health.

As to the symptoms of the consecutive stage of feverish re-action in cholera, they differ but little, if at all, from those of ordinary typhus, except, perhaps, in the greater rapidity with which they but too often run to a fatal termination; and as this kind of fever is treated in no part of the world with more success than in England, the entire management of this stage of the disease is left to the zeal and science of the profession at large.

Attentive nursing, and assiduous, well-directed rubbing, are of the utmost importance; a strictly horizontal position, however, must be maintained until the heart shall have partly, at least, recovered its action. An erect, or even semi-erect position, during the collapse, has been often observed to produce instant death. Warm baths, therefore, for this and other reasons, are worse than useless; evaporating fluids, and indeed all moisture applied to the skin, seem to be contra-indicated for obvious reasons. Hot air baths, so contrived as to be applicable in a re-

cumbent posture, and admitting access to the patient for the purpose of friction, may be of use."

When the cholera first appeared in Russia, the French Government also sent an agent to St. Petersburg to investigate the nature of the disease.

This agent had abundant opportunity to witness and treat the disease in a large hospital of 250 patients at St. Petersburg, and the following are his remarks respecting the treatment of Asiatic cholera at that place in 1831.

"There is no disease in which the same treatment will apply to all possible cases; on the contrary, we must always take into consideration the constitution of the patient and the stage of the disease; and just so it is with respect to the treatment of cholera. Let it not be thought, that, in this malady, it is sufficient, as it is in many others, to administer remedies internally; on the contrary, these remedies have produced comparatively but little effect; whilst assiduous care, combined with exterior applications faithfully persevered in, have succeeded in restoring patients laboring under very severe attacks.

The treatment which I have followed, as well as many of my colleagues, and from which we have obtained the greatest success in the first stage or degree of the malady, and which has produced four times upon myself the most salutary effect during the course of the epidemic, was the following: As soon as the first symptoms indicated appear, that is, loss of appetite, flatulent noise in the lower part of the abdomen, even vertigo and anguish, accompanied by nausea and diarrhea, we must go to bed, and take

immediately a cup of strong coffee, without milk, with or without sugar; and, soon after, from four to six drops of oil of peppermint upon a piece of sugar: we must apply, at the same time, a bag filled with oats, ashes or bran, very warm, upon the abdomen, changing it as often as possible, and keeping ourselves quite warmly covered. We may repeat the same means, until we have succeeded in bringing on a very copious perspiration, which, when it can be produced, brings at once the attack to a favorable crisis. If, however, much headach, and a severe pain in the pit of the stomach should be experienced, and should not yield to a large mustard plaster applied to it, bleeding, to the amount of a pint, or even a pint and a half, becomes indispensable, and must even precede all other remedies, if the constitution of the patient be strong and sanguine; even the most debilitated ought not to apprehend any ill consequences from bleeding if the symptoms above detailed are strongly marked, for their debility is deceitful, and will cease as soon as they are delivered from the blood which was stagnant, or had not a sufficiently free circulation.

It is still more important to send the patient to bed, if he has the diarrhea, for many people have experienced the full development of cholera, and even have died, for having, in the beginning, refused to take their bed for a simple diarrhea. I have often cured by mere repose, and the warmth of the bed, a diarrhea which would have certainly degenerated into cholera. I did not even permit my patients to rise from their beds for the purpose of evacuation, but they made use of bed pans.

For diet, chicken broth, with a little rice or sago

boiled 4 or 5 hours, to which we may add a little red wine. A decoction of salep, in the juice of the black muscade grape, is likewise to be recommended. The drink must consist of rice water, or toast-water, with a little red wine.

If the oil of peppermint, the tea of melissa, the ipecacuanha administered every three hours in small doses of one-tenth of a grain, and the warm bags, do not stop the diarrhea, it becomes necessary to apply mustard plasters upon the whole surface of the abdomen; and, if we should not thus succeed in overcoming the disposition to vomit, we may give soda powders composed of acidulated carbonate of soda, 10 grains; essential salt of tartar, 6 or 8 grains, and of elio-sachar-citri, 10 grains; swallowing immediately after a tea-spoonful of lemon-juice, with a little water. In such cases, I have often arrested the progress of cholera by means of emetics and castor oil, the only purgative I have used during the epidemic. I have not been less fortunate in cases of diarrhea.

In the second stage, in which medical aid is certainly very important, nothing however ought to be done with precipitation. We must never forget that the first thing to be attended to, is to restore the blood to its circulation and organical warmth. In the greater number of cases, we begin the treatment, by applying to the whole surface of the abdomen a large mustard plaster, which must cover the pit of the stomach. If, however, the patient is too irritable, the mustard plaster may be divided, and a number of small plasters applied in different places, one after another, though, to speak the truth, this last method is not so active and effectual as the former. Frictions must be instituted over the whole body of the patient,

and that is best done by four persons rubbing all at once, with dry flannel, powdered over with mustard. I have always observed, that frictions made with spirituous liquors, were much less effectual, inasmuch as the body grew cold as soon as they ceased rubbing it. The same has been observed by many of my colleagues. For the parts of the body in which the cramps became too severe, I made use of a mixture of oil of turpentine, three ounces; with oil of tusquiam, a half an ounce; oil of gilliflower, three ounces and a half; spirits of sal ammoniac, from half an ounce to six drachms—oil preserving the heat of the body much better than spirituous liquors.

This treatment is followed by mustard plasters on the calf of the legs, the thighs, the soles of the feet, the arms, the spine, either alternately, or even all at once, according to the urgency of the case.

We have been taught by experience, that baths of all kinds, including vapor baths with vinegar and water, not only remained without effect, but even give great pain to the patient, who is exposed to take cold. If bathing was so effectual at Moscow, we must attribute it to the season; for the plague broke out in that capital in the month of October, and lasted the whole winter; in consequence of which, the patients were carried to the hospitals half frozen.

It has been equally impossible for us to follow the internal treatment prescribed either by the English physicians, or by those of Moscow; that is, we could use opium only with the greatest circumspection, for that active remedy has unfortunately produced, too often, congestions of the brain so intense that nothing could calm them; and that, too, without arresting the progress of the malady. I can say the same of calo-

mel administered in large doses: the use of the latter has been almost entirely rejected.

I have been more fortunate in the use of bismuth powders, recommended by Dr. Leo of Warsaw, and taken every two hours in doses of three or four grains, with ten grains of sugar, though this remedy has not always answered my expectations. Much more favorable results were obtained from a remedy truly Russian, and which has been lately recommended by Dr. Searle of England, who practiced at Warsaw during the epidemic. This remedy has been, for very many years, used by the Russians in affections analogous to cholera, but much less intense; it consists in a solution of common salt, two table-spoonsful of which must be dissolved in a glass of boiling water, strained, and taken in one draught, while yet lukewarm; it is thrown up in a very few minutes, and in the greater number of cases, it is already mixed with a little bile; which circumstance is a favorable one, since it proves that the spasm of the biliary ducts has diminished. One table-spoonful of the same solution is afterwards given every hour; this dose is taken cold; and is followed by a smaller dose still; that is, by a tea-spoonful, taken at a time, until all alarming symptoms have subsided. It has also frequently happened, and that even in very severe attacks, that the first dose was sufficient. At other times, namely, when there was no bile mixed with the water thrown up, I have been obliged to make a venesection for the purpose of taking six or eight ounces of blood; and, when the blood would not run, I applied leeches to the pit of the stomach, or drew blood from it by cupping, and the relieved the pa-

tients of a burning sensation, and of the fatigue of frequent vomiting.

The patients treated in this manner, that is, with a solution of common salt, were often very soon restored to health, and could hardly be recognized after a few hours. In a few cases, the disease took the character of a congestive typhus, but not very intense. In a very few cases, I have been obliged to discontinue the solution of common salt to give the bismuth in the above indicated doses, or camphor dissolved in ether, or mixed with the tincture of canella, or any kind of aromatic water, to which should be added, a mucilage of gum-arabic and sugar. Such are the remedies which have best succeeded. As soon as the cholera assumed the character of a typhus fever, I applied leeches behind the ears or on the neck and cold water and even ice on the head, blisters on the neck and calf of the legs; prescribed castor oil when it became necessary, and chiefly oxygenated muriatic acid, taken in doses of half an ounce, or even an ounce, upon six ounces of decoction of salep or marsh-mallow.

With respect to drink, I consulted the patient's own wishes, not, however, before he had thrown up the solution of salt. The best drink, however, was cold water often repeated, but in small quantities: I observed that the patients always ejected warm drinks. I have even given ice broken in small pieces, and recommending that only a part of it should be swallowed, and the other suffered to melt in the mouth.

In the third stage, which is that of paralysis, there is hardly any remedy. Emetics, phosphorated ether, that is, two grains of phosphorus and two drachms of ether, well shaken together, or, what is still better, a solution of six grains of phosphorus in a half ounce of

oil of sweet almonds, and taken every half an hour in doses of ten drops, upon the same quantity of ether as recommended by the physicians of Moscow. The whole class of excitants, such as the spirits of harts-horn, camphor, musk, Champaign wine, sulphate of quinine, &c., administered in the supposition of an intermittent fever; frictions, mustard plasters, baths, pumping of cold water upon the pit of the stomach and spine: commonly produced no other effect than to prolong, sometimes, the sufferings of the patient. If, however, we should observe some favorable symptoms, it becomes essential to avoid a too active internal treatment.

The faculty does not recognize any predominant remedy, nor any one very remarkable for success in particular cases; a circumstance which may be attributed to the rapidity of the progress, and the malignant character of the epidemic. It is probable that cholera, like all other epidemic diseases, such as small pox, scarlet fever, &c., is, perhaps, of different characters, more or less malignant. That may also account for certain remedies, such as bismuth, having proved sometimes so effectual.

Additional reflections upon the use of bleeding, and of opium, in the treatment of cholera.

I have adopted bleeding only with the young and plethoric patients, and that at the very beginning of the attack, in case of severe pain, or when the above indicated remedies for the first stage have not had the desired effect; it is then that bleeding was so effectual, that no other remedy could be substituted for it. The object of bleeding is to diminish that part of the blood, which through the influence of miasm, is dis-

posed to stagnate in the interior part of the body. By means of bleeding, we prevent, or at least, diminish the spasm, as well as the venous congestion which results from it ; and by that means relieve the heart and lungs from all oppression, in order to restore to them the full power of their respective functions. We can obtain that result only in the first two stages of the malady ; that is, before circulation has ceased in the articulations of the hands. In cases requiring bleeding, it is, consequently, of the greatest importance to bleed as soon as possible, for the blood sensibly alters in its chemical nature, and no longer runs from the vein, or, if it does, it is with with great difficulty, and in so small a quantity as renders it inadequate to the relief of the patient. When the disease has too far advanced, bleeding has sometimes hastened death.

The nature of the epidemic at St. Petersburg convinced me of the impossibility of following the method of the English physicians, who, in India, bleed to the amount of more, and much more, than a pound of blood. I have always confined myself to ten, eight, or six ounces.

The use of opium, so much extolled by English physicians in India, and by them prescribed in large doses, has as little succeeded in my practice as in that of my colleagues. It has, on the contrary, according to all our observations, served only, as said before, to determine the blood towards the brain, and to render the state of stupor and somnolence much more difficult to overcome, than when we made no use of that remedy ; hence I soon gave it up almost entirely. What has led me to the adoption of that plan, is, that vomiting and diarrhea are only symp-

toms, which, in the more severe attacks, are not the most prominent; it even very frequently happens, that these symptoms are hardly perceptible: and, as we cannot admit that the individual attacked with cholera, dies solely of starvation caused by vomiting and diarrhea, but in consequence of the paralysis of the nervous system, chiefly that of the lower part of the abdomen, or ganglionic system, and of the chemical and organical decomposition of the blood, we may easily conclude that opium cannot be a universal remedy for cholera.

The brilliant success mentioned by English physicians has been of very rare occurrence, and due only to the very large doses which they have had the courage, or rather the temerity to administer. The ordinary doses, as we have had occasion to observe in our experiments at St. Petersburg, have been very generally injurious; for they are not active enough in the beginning, and paralyze, in their secondary effect, very visibly and strongly, all the functions of the patient: they contribute very much to the complete development of somnolence, which is sometimes consequent to cholera; but then it is less strong, and can be soon removed, if no opium has been administered."

Dr. Lefevre, physician to the British embassy at St. Petersburg, and who had ample opportunities of seeing the disease, and ascertaining the best method of treatment, remarks, "The epidemic cholera, upon its first invasion, baffles all attempts to conquer it; but it gradually loses its intensity, and towards its decline, becomes as tractable as other disorders of the alimentary canal."

Dr. L. witnessed the employment and the general failure in the first of the epidemic, of the following methods of treatment, all of which proved serviceable at a more advanced period of the disease :—venesection, sweating by various processes, calomel and opium, rhubarb and magnesia, sub-nitrate of bismuth, hot baths, frictions with hot cloths, &c. &c.

Dr. L. is, however, an advocate for bleeding, and thinks it decidedly beneficial, when employed judiciously. He remarks,

"Bleeding from the arm in the first stage, when the pulse is full and the temperature not reduced, is often sufficient to cut short the disease. The quantity of blood to be drawn should be but small; eight ounces will be sufficient to allow the remainder to circulate more freely and relieve the heart, and this will not too much exhaust the patient.

The blood is generally thicker than usual, highly carbonized, and forms a loose coagulum. I do not know if the blood of cholera patients has been analyzed during the present epidemic. The patient usually feels immediate relief, particularly where the head has been much affected. He should be bled in the horizontal posture, and remain quiet for some time afterwards. The operation of medicines is generally much facilitated by a small bleeding.

The absence of the pulse is no prohibition to the use of the lancet, unless this is accompanied by other symptoms of great debility, and the system has been exhausted by previous evacuations, and the surface is covered with a cold clammy sweat; in such instances I have never seen blood-letting serviceable, though many assert the contrary. In some cases, the pulse ceases to beat very early, but upon opening a

vein the blood flows slowly at first, gradually the current becomes fuller and stronger, the pulse beats very sensibly, and the heart thus relieved is enabled to continue the circulation."

The following was Dr. Lefevre's own mode of practice, when called in at an early period of the disease:

"If the patient is robust, the pulse still perceptible, and the system not too much reduced by evacuations, I order from six to eight ounces of blood to be drawn from the arm, the patient being first put to bed in the recumbent posture.

The following draught is then to be given:

Laudanum and æther, of each twenty-five drops. Strong peppermint water, an ounce and a half.

If this be rejected, it should be repeated immediately; if the second be likewise not retained, then a clyster of linseed tea with fifty drops of laudanum should be administered.

It often happens that the patient after taking the first dose, falls asleep, and wakes in perfect health.

A large sinapism to the abdomen, and bottles of hot water to the feet, should not be omitted; if these means produce speedy relief, an ounce of castor oil should be prescribed as soon as the stomach and bowels are quiet."

TREATMENT OF THE CHOLERA IN ENGLAND.

It has been already stated, that the cholera appeared at Sunderland, in the north of England, in the autumn of 1831.

Previous to that time, it was predicted by medical men, that if the disease should appear in England, it would exhibit a less violent character than it had in India.

This prediction has hitherto proved correct. In no country has the cholera been more mild than in the large towns of England. In London, "the largest city ever visited by pestilence," the disease prevailed but for a short time, and destroyed a less number than in almost every other city it has visited.

This exemption of modern Babylon, with its immense mass of needy, filthy, starving and vicious population, is one of the most mysterious circumstances that has hitherto occurred in the progress of the cholera.

There is, however, reason to fear, that London, Manchester, and many other of the large towns of England have been spared only for a season; like several towns in Asia which were not visited for a year or two while the disease prevailed around them; but were afterwards ravaged by this modern plague in its most violent form.

The treatment of the cholera in England has not varied much from that which had been adopted in India and other countries. Bleeding, emetics, calomel, opium and external heat, have been among the chief remedies employed.

The disease, however, was not so new to the medical men in England, when it first appeared there, as it was to the physicians in the north of Europe when the disease first invaded Russia.

Many English Physicians had witnessed much of the disease in India, and had given full and accurate accounts of it, to the British public. Among other

British physicians, now resident in England, and who had seen the disease in India, and given accurate descriptions of it, as it appeared in that country, is the celebrated James Johnson, Physician Extraordinary to the King of England, and editor of the far famed Medico Chirurgical Review, &c. &c.

In November last, Dr. Johnson submitted to the Westminster Medical Society, a series of propositions respecting the cholera; and although but part of them relate to the treatment of the disease, yet they are all so correct and important; embodying in a small space most that we know concerning this disease, that I am induced to extract the whole of them, and place them in this part of the volume.

Propositions.

"1. That in *epidemic* cholera, as in most other epidemics, a poison or sedative principle, whether emanating from the earth, from animal or vegetable bodies on the earth, or engendered in the air, strikes a predisposed individual, and, after an uncertain period of incubation, produces a train of phenomena, forming the subject of subsequent propositions. In *sporadic* cholera, the general or diffusive cause is absent; but when the common exciting causes are strong, and the subject highly predisposed, severe, or fatal cases will occur, where the *symptoms* cannot be distinguished from those of the epidemic cholera.

2. The effects of the choleric poison exhibit a great analogy to those produced by the virulent contagion of typhus, and the concentrated miasmal exhalations that give rise to malignant fevers, remittent

and intermittent; such as have been seen in Batavia and other highly malarious places.

3. This poison shows its effects according to the evidence of our senses, *first*, on the nervous system, as evinced by the prostration of strength,—by the affection of the head,—by the arrest of the secretions (dependent on nervous energy), and, in fact, by a depression of the whole of the sensorial functions, as well as those of the organic life.

4. The *secondary* effects of the choleric poison are shown in the vascular system. The heart acts feebly,—the circulation recedes from the surface, and the blood accumulates in the vessels of the internal organs; decarbonization and calorification cease, or are greatly diminished; the temperature of the body falls to that of surrounding inanimate substances; paleness is changed to blueness; and the influence of the ganglionic system of nerves seems to be nearly suspended, if not annihilated.

5. It is at this period that nature appears to make violent, but too often unsuccessful efforts, to restore the broken balance of the circulation, and to re-establish the secretions, by sickness and purging; the ejected fluids being exudations, rather than secretions.

6. If nature does not succeed by the above mentioned efforts to restore circulation, secretion, and consequently oxygenation and calorification, these efforts themselves prove auxiliaries to the choleric poison in destroying life.

7. We are not, in our present state of knowledge, certain whether the spasms be merely the effects of the poison on the nervous system, or an effort of na-

ture to resist it; but they, like the sickness and purging, tend ultimately to exhaust the powers of life.

8. If nature, (by which I mean the constitution), whether with or without aid, be able to resist the first or depressive shock of the poison, and institute a reaction in the system, that re-action, in a great majority of cases, becomes a fever, exhibiting a new train of phenomena, and demanding a different mode of treatment. If this view be correct, it would lead to the inference that the choleric symptoms constitute the first or cold stage of a choleric fever.

9. If reaction, with restoration of circulation, secretion, and oxygenation, do not take place, the patient dies in a state of asphyxia, the intellectual powers often remaining but little impaired, till the last glimmer of the lamp of life is extinguished. This has been often witnessed in concentrated miasmal fevers, both within and without the tropics.

10. *Pathology.*—All the changes which present themselves in the dead body, are, in my opinion, *effects*, not causes, of the disease; with the exception of the congestion of black blood in the internal organs, which is almost the only phenomenon observable when cholera terminates fatally in a few hours. The traces of inflammation in various organs after death, indicate the causes or effects of the re-active fever, rather than of the cholera which precedes that fever.

11. *Treatment.*—As we have no means of expelling or neutralizing the poison, we can only endeavor to counteract its effects, and to assist nature in her remedial movements.

12. The primary or essential indication is to restore the equilibrium of the circulation. That equilibrium

effected, a restoration of secretion, calorification, and oxygenation follows.

13. The balance of the circulation is to be restored partly by internal, partly by external means; but always by several means simultaneously employed, at the very earliest period of the disease.

14. Venesection may appear a desperate remedy, but we have a desperate disease to combat. I proposed this measure many years before the epidemic broke out, and it has been adopted to a very considerable extent, both in Asia and Europe. I proposed, and would still propose venesection, with a two-fold view; first, to relieve the heart and internal organs from a portion of that deluge of black blood in which they may be said to be drowning;—secondly, to turn, as it were, the tide of the circulation from the centre to the surface of the body. This measure I would chiefly confine to the young, the robust, and the previously healthy, and in them contemporaneously with, or subsequently to, the measure which forms my next proposition.

15. The first internal remedy which I propose, both in aid and in imitation of nature, is a stimulant emetic, as infusion of mustard seed, or what perhaps would be better, the sulphate of zinc. I propose this from a conviction founded on observation, that of all the means which nature or art can bring into operation, the act of *full vomiting* is the most powerful in driving the blood from the trunks to the capillaries—from the internal organs to the periphery of the body. It is also the most universal excitant of secretion in every glandular structure of the living machine. Nausea and retching are quite different in their effects from the operation of full vomiting. Nausea and

retching depress the power of the heart and nervous system, and prevent the blood from flowing to the surface; full vomiting impels the circulation with such force into the superficial vessels, that it is extremely difficult to stop the flow of blood from the orifice of a vein during vomiting. I have seen the blood come from a vein under such circumstances, with all the characters, or at least the appearance of arterial blood. This proposition is well exemplified by sea-sickness, of which I have had painful personal experience. An unfortunate landsman bears a close resemblance, during the first storm at sea, to a man with cholera. He staggers about the deck, or clings to the railings of the lee-gangway, striving to keep down the rebellious heavings of his own stomach. But all wont do; up it comes; and during the first vomitings, I have seen the blood gush from the mouth, nose, and even the eyes of the sea-sick sufferer. From being actually blue with nausea, his face becomes red with vomiting. But the cause of the sickness still continuing, he ultimately becomes pale and exhausted; he is like a man who takes a fresh dose of tartar emetic, after each paroxysm of vomiting. The wonder is that he does not die; some *have* died. It is curious that Cœlius Aurelianus, who gives the best ancient account of cholera morbus, places sea-voyaging among the causes of that disease.

It is but justice to state that Mr. Boyle proposed and practiced *full vomiting* in the epidemic cholera ten years ago; and I have the very best authority for affirming that this practice, when it was pursued on the Continent, was eminently beneficial.

16. As soon as vomiting has produced its salutary effect on the circulation, or has failed to produce that ef-

fect after a fair trial, I would propose diffusible stimuli, with calomel and opiates, but not in immoderate doses. Brandy and laudanum, as the most readily procured, and the least likely to be loathed, are perhaps the best. But the choice of stimulants must be left to the practitioner; and the danger of inducing subsequent inflammation should be carefully borne in mind. Calomel alone would probably be the best medicine after the emetic.

17. The remedies above mentioned, in moderate, but efficient doses, seem to impart vigor to the heart and nervous system, through the medium of the stomach, while they mitigate the spasms, and restrain the useless or injurious exudations of fluids from the intestinal canal, the mercury changing that exudation into secretion.

N. B. Would not the inhalation of oxygen gas be beneficial?

18. The external remedies are three—heat, friction, and counter-irritation. These three means should be employed, not only simultaneously with respect to each other, but contemporaneously with the internal remedies. They should be also so employed, that the patient may not be required to throw a single voluntary muscle into action. Every muscular movement, even in that of sitting up in bed, is prejudicial, or absolutely dangerous, during the exhausting orgasm of cholera. An apparatus permitting the application of heat, friction, and counter-irritation, without the necessity for any muscular exertion on the part of the patient, will be shown to the Society.

Query.—As the cramps and spasms are chiefly confined to the extremities, and as the exhausting

pain of these cramps is in proportion to the contraction and swelling of the affected muscles, would not firm compression by a bandage, mitigate the spasms? Patients in cholera often cry out for the most violent extension and pressure of the cramped muscles.

19. *Prophylaxis.*—Conceiving myself, as well as every member of this Society, bound to abstain from all discussion of the question of contagion, I shall condense the subject of prevention into four words,—temperance, cleanliness, ventillation, and fearlessness:—in fine, the pursuance of all those means which tend to preserve general health, and the avoiding of all those causes which predispose to common, or indigenous diseases of our own climate.'

In respect to the cause of the epidemic, we have no reason to alter the conclusions to which we have come on former occasions—namely, that the disease originates in causes of which we are ignorant, and over which we have no control, and that, in crowded, filthy, and ill-ventillated places, it takes on an infectious character, tending still farther to propagate and heighten the danger of the disease. This is the doctrine which we have always maintained, from an unbiassed consideration of facts. We shall be ready to alter our opinion, whenever our experience and reflection shall convince us that we are wrong. The disease has now come within the range of observation; and English practitioners will not have to ground their conclusions on reports from the banks of the Ganges, the Ural, the Wolga, the Euphrates, or the Nile, only—they will probably have ocular demonstration—and to that ordeal we cheerfully submit."

When the cholera appeared at Sunderland, New-

castle, and the neighboring towns in the north of England, medical men from all parts of the country, with a noble and generous devotion to the cause of suffering humanity, hastened to the places where this pestilence prevailed, and observed for themselves the progress and the nature of the malady, and endeavored to ascertain the means most likely to mitigate its severity.

They did not wait to learn if the disease was contagious or not, or to calculate the amount of the risk they run, in thus visiting infected districts, and personally examining the sick, the dying, and the dead. But with a most praise-worthy spirit, which has been manifested by the profession in all countries where the cholera has appeared, they determined to inform themselves as soon as possible, by personal observation of the nature of the disease, and thus qualify themselves to afford all the relief in their power to their fellow men.

Several of the distinguished physicians in England, who thus left their homes and witnessed the disease at Sunderland, Newcastle, and other places, have published the results of their observations, and from their publications I shall make large extracts.

Dr. Thackrah, of Leeds, previously known to the medical profession by other publications, had ample opportunities of witnessing the cholera at Newcastle and Gateshead, and has given to the public the results of his experience at those places. Dr. T. describes an epidemic cholera which appeared in Leeds, in 1825, and which exhibited the same symptoms as the present epidemic. But I shall refer to the epidemic of 1825, in another part of this volume. Dr. T. is a decided advocate for venesection, and for

scruple doses of calomel. He saw this practice prove decidedly beneficial in Sunderland, during the present epidemic.

George Hamilton Bell, author of an excellent treatise on the Cholera Asphyxia, and who had seen the disease in other countries, was deputed by the Edinburgh Board of Health to visit the places in the north of England where it prevailed. He also bears testimony to the beneficial effects of blood-letting, and relates a case where it proved decidedly beneficial, in a well marked case of cholera asphyxia, and when it was resorted to in the stage of collapse.

Dr. Ogden of Sunderland, in a letter to the Editor of the Medical Gazette, thus refers to the treatment of the disease in that place:

"On the important subject of cure, I fear there is little satisfactory to be said. The number of recoveries from *cold blue* cholera has borne a very small proportion to the deaths. Of the 330 recoveries reported, a great majority was not attended with coldness and lividity of the extremities, great collapse, and loss of pulse, so characteristic of the dangerous cases.

The Indian rule of bleeding has been freely tried with various success; sometimes blood could be obtained, at others it could not; in the latter case, no harm was done by the attempt. When blood was obtained in the commencement, it was often productive of benefit; the circulation becoming equalized, the patient expressing great relief, the pulse improving and continuing perceptible to the termination, whether in death or recovery. Sometimes, again, it appeared to diminish the powers of life. On the whole,

it is a doubtful remedy; a criterion is wanting to guide us in the employment of it. Dry external heat is of great importance; hot air baths have been tried, but the deadly coldness of the extremities is totally unaffected by them; the contact of hot solids, as bricks, bottles, bags of sand, is much better. Friction of the extremities with hot flannel should be next to incessant; it is one of the few means we possess of restoring the circulation; indeed, there have been recoveries principally due to the assiduity with which it was employed. Brandy is always used, often rejected a few minutes after it is swallowed. Opium sometimes relieves the sickness, sometimes it does not. Calomel, in the majority of cases, appears to possess little or no efficacy. Viewing the mucous membrane and the skin as one continuous surface, and considering the suspension of their powers of absorption, we are led to the employment of such remedies externally and internally, as act as mere stimulating applications. Sinapisms are to be applied to the epigastrium, to allay the vomiting, and to the calves and thighs to cure the spasm. A mustard emetic has often succeeded in restoring the pulse. Oil of turpentine by mouth in ʒss. doses, and by injection, is a powerful stimulant. Camphor and the essential oils of mint and cajeput are inferior to oil of turpentine in stimulating power. I have not seen any trials of the fixed alkalies, but have heard of their failing like every thing else.

The consecutive febrile state is to be treated like fever under any other circumstances. There is usually very great cerebral oppression, indicating blisters to the nucha and shaving of the head. Small doses of calomel are also beneficial. The greatest

care is required in avoiding errors in diet during convalescence.

Dissection has hitherto revealed nothing which accounts for the formidable train of symptoms whose cause is sought. There is an accumulation of blood in all parts of the venous system, with the curious exception of the vena portæ and its branches. The engorged state of the lungs, and the oppressed respiration during life, point to the respiratory system as principally suffering, either idiopathically, or symptomatically of some altered condition of the nervous system.

Prophylaxis.—The attack is generally preceded by diarrhea, varying in duration from six hours to three days: this is the critical time for successful treatment. I have found pills prepared according to the following forumla very successful in arresting the diarrhœa:

℞. Opii, gr. xv.

Hydrarg. Submur. ʒj.

Pulv. Bacc. Capsici, ʒiss. vel. ʒij.

Confec. Rosæ, q. s. ut fiant pil. lx. As they are in constant request when visiting the abodes of cholera patients, it is convenient to carry a box in the pocket. One or two may be given every three hours until relief is obtained. They produce a state of constipation which continues two or three days, and which it is quite unnecessary to remedy by laxatives, as the bowels soon resume their natural functions. When there is much pain of abdomen or griping attending the diarrhœa, it is alleviated by hot fomentations or a sinapism.

During the prevalence of cholera, there are observed among persons otherwise healthy, various anomalous affections of the nervous system, as spasms and

cold sensations of the hands, feet, and legs, peculiar thrilling sensations of the extremities of the fingers and toes, and a feeling of great anxiety in the præcordial region.

I am, Sir,
Your obedient servant,
Henry Ogden, M. D.

Sunderland, Jan. 14, 1832."

Dr. James Adair Lawrie, Professor of Surgery, Andersonian University, and Dr. David B. White, one of the physicians to the Gateshead Dispensary and Cholera Hospital, have also given to the public the results of their experience in cholera. Their views respecting the treatment of the disease are thus given in the Medico-Chirurgical Review, for April, 1832:

"Both Dr. Lawrie and Dr. White insist on the necessity of attending to the premonitory or diarrhœal stage. Dr. L. recommends the patient to be put to bed, kept warm, and to have a flannel band round his abdomen—then to take half an ounce of castor oil with fifteen or twenty drops of laudanum, and, after this has operated, thirty drops of laudanum, or one grain of opium. Saline and drastic purgatives are strongly deprecated. If the discharges continue, the opiates must be repeated with caution, and if two or three grains of opium fail, Dr. L. would open a vein, and in every case apply a sinapism or blister to the abdomen. If the above measures fail, and collapse threaten, he advises a mustard emetic, to be followed up by twenty grains of calomel, and as much laudanum or opium as the patient will bear. Opiate enemata deserve trial, and if opium has been pushed

as far as is safe, mucilaginous enemata should be thrown up with a Jukes' syringe.

Dr. White remarks, that in some cases, not diarrhœa, but obstinate costiveness prevails, after a longer or shorter duration of which, the disease suddenly appears. For this costiveness he seems to recommend a pill of scammony, jalap, calomel, and aloes. In this stage Dr. W. also advises the washing of the body with warm water, and subsequent friction with coarse cloths. He seems to think that personal filth is a great predisposing cause. He orders his patients, on their retiring to bed, the lavation and rubbing—then the pediluvium and a pill of cal. prep. gr. vi. opii. gr. j.—in the morning castor oil and laudanum, or pulv. rhei, ʒss. zinzib. pulv. gr. viij. to be repeated if necessary.

Treatment of the Acute Stage. Dr. Lawrie recommends a mustard, or salt, emetic, the former not too strong; he doubts their efficacy or safety when profuse vomiting of colorless fluid is a prominent symptom. As soon as the emetic has been swallowed a vein should be opened. His experience is in favor of bleeding, and, as a general rule, the earlier the better. In some cases it undoubtedly appears to do harm, and it is difficult to explain this discrepancy of effects. We may say that the earlier the better, that it is more safe in the robust, probably more safe after collapse than when it is just on the point of being established, and in the moderate than in the very severe cases. Such are Dr. L's notions. After these means we are to give a large dose of calomel and opium, to a stout man thirty or forty grains of the former within two hours. Of opium a large dose should be given at first with the calomel, and its re-

petition should be regulated by circumstances. Dr. L. strongly recommends counter-irritants to the throat, neck, spine, to the latter indeed the cauterizing-iron. Stimuli should also be given internally if the stomach will retain them.

Dr. White thinks blood-letting has been too universally recommended. When vascular debility is very apparent he would not employ it, but when the pulse retains its force or rises during the operation, it is advantageous. Bleeding, too, he thinks an admirable sedative, when great mental excitement prevails. He recommends the exhibition of cold water slightly colored with brandy. He speaks well of cupping, external warmth, frictions for the spasms. He has found nothing but disappointment from the exhibition of stimulants; but speaks very highly of large injections of warm water.

Stage of Collapse. Dr. L. recommends warmth—an emetic as before—the abstraction of a few ounces of blood while the pulse can be felt in the brachial artery—then warm injections of beef-tea with brandy and laudanum—counter-irritation—diffusible stimuli—cold drink in its most agreeable form, for which, and for which only, the patient craves. All fluid should be given in small quantities at a time; thin arrow-root or beef-tea often remain on the stomach when nothing else will. External warmth is to be maintained by stoves or large fires in the room.

'A very simple method of heating a room, is an iron tube bent at its centre, the bent part converted into a small reservoir or worm. The reservoir is put into the fire and heated red hot; to the one end of the iron tube another of tin or of patent cloth is attached, and to its extremity a pair of large bellows.

Air is thrown into the reservoir or worm, becomes heated, escapes at the opposite end, and is diffused through the room. One of this kind has been described to me; the principle might easily be improved into a very efficacious means of raising the temperature of a room or bed, to any required height. The air-bath is another means of applying heat to the surface generally, but air being a bad conductor must not be trusted to alone. Tin cases containing hot water, light and shaped to apply to any part of the body, are very useful for applying heat locally; to the same class belong bricks, bags of heated salt or sand, hot plates, and many others. My friend, Mr. Brady, at Gateshead, was in the habit of using bran mashes, for communicating heat to the surface, with good effect. A quantity of bran is put into a tub, and boiling water poured into it in such quantity as merely to moisten it. It is then thinly spread in a bag sufficiently large to cover the whole body, and applied from the neck to the feet. It must not be applied too hot. This mode has the advantage of retaining the heat long, and is one of the best forms of moist heat which I know. If we wish to excite the surface powerfully, we may add spirits of turpentine to the bran. It is exceedingly difficult to prevent the patient from tossing in bed, withdrawing himself from the heated bags, and throwing off the bran and bed-cloths. A nurse must be constantly beside him to prevent this as much as possible.'

When the perspiration is profuse and cold, it should be carefully wiped off with dry hot towels, and afterwards camphorated or ammoniated oils should be long and diligently rubbed on those parts where irritants are not applied. When the head and face re-

main deadly cold while the trunk and limbs are heated, it is a very bad symptom. It is singular that the patient dislikes the application of heated cloths, and begs for free *cool* air. Dr. Lawrie recommends the employment of galvanism, the agent to which we ourselves directed attention in our last number. He advises the application of the wire along the course of the eight pair of nerves in the neck, and over the region of the heart and stomach. Dr. L. would be inclined to give calomel in moderate doses along with the stimuli. Other means were employed with doubtful results. Oxygen gas was given both by the mouth and by injection, but with very little benefit. It was recommended to throw large quantities of heated air into the bowels, but Dr. L. does not seem to have seen it attempted. Stimulating enemata of sp. terebinth, and mustard were used by some; they frequently produced irritation of the rectum and bloody stools; Mr. Baird, of Newcastle, used the tobacco enemata in one case of collapse with seeming benefit. Dr. L. tried it in two cases: in one it did no good, in the other it appears to have done harm. We think it a dangerous remedy, not warranted by principle and reasoning. When dogs are poisoned by tobacco injections the symptoms are precisely those of cholera:—purging, vomiting, cessation of the pulse, complete collapse. How such an agent should be likely to prove beneficial in cholera, we cannot so much as imagine.

Dr. Lawrie observes, that in the stage of collapse nature does and will do nothing; perhaps the expression is too strong. If the following fact be one, it is instructive. A medical man left a cholera patient, saying that he could do no more for him, and that he

must die; another surgeon passing by accident, was asked to see him, worked hard for four hours, and saved him!

Dr. White's remarks on the treatment of this stage are brief.

'I have found the simplest, the most successful treatment:—the calomel and opium, the carbonate of ammonia, warm injections, stimulants as cordials, friction where necessary, and warmth, essentially of a dry kind; worsted stockings filled with hot sand, as I learnt from the practice of Mr. Knaggs of Gateshead, is admirably adapted for this purpose.

To allay the vomiting, as in the former instance, effervescent draughts, &c. should be used. A most salutary and speedy application, is by laying over the stomach pledgets of linen, dipped in boiling water. Whatever may be the plan adopted, all unnecessary disturbance to the patient should be avoided. The death-bed is often rendered more agonizing by the mistaken, but well-intentioned, zeal, the benevolent officiousness of inexperienced practitioners. An enema, consisting of a warm infusion of tobacco, half a dram to a pint, has been recommended by Mr. Baird. I have seen recovery in two apparently hopeless cases, in which this remedy has been employed.'

Dr. W. makes a remark which is highly deserving of attention. When cholera first rages its inveteracy is greater than at a subsequent period, and remedies which utterly fail in the first instance, acquire a renown and celebity when nature herself is at work to assist them. Dr. White speaks slightingly of mustard emetics; he has never seen them serviceable in the collapsed stage, whilst in some instances they were incontrovertibly mischievous.

'Prior to death, when it takes place during this stage, the disease sometimes assumes a form, well calculated to deceive those not acquainted with its character. The pulse rises, the skin becomes warm and covered with perspiration, the patient expresses his relief, and, perhaps, his full anticipation of recovery: in an hour or two, all is over. The blueness, so peculiar to this disease in other countries, has not been, by any means, a general characteristic in this. In not one instance in ten, has it assumed that form. The skin of the hands and face often becomes of a brownish hue. In the most deadly form of cholera, there is a tone of voice, a wail, which once heard, can never be mistaken; to him upon whose ear it has fallen in the accents of anguish, it can never be forgotten; I have always found it the certain prognostic of death.'

Here we see that the blue color, the true blue, as the papers sarcastically term it, is not present in one case in ten. Yet this true blue is one of the pathognomonic symptoms that the ultra contagionists, that is, the thick-and-thin importation and nova pestis party hold by as their sheet anchor. But what signify facts? At the time we are writing, the 25th of February, the epidemic is stealing over this metropolis.* We have seen many, indeed most of the cases that have hitherto occurred, but in no one instance could our eyes, unassisted by the spectacles of quarantine notions, and the mists of party feeling, discern any shade of blueness. That color is seen in its deepest dye in the visages of contagionists and sycophants.†

Treatment of the Rallying Stage. In this, the sur-

* London. † Reviewer.

geon is to watch nature; to prevent recurrence of collapse on the one hand, and ward off congestions of the head and viscera on the other. The first is avoided by external warmth, and by giving warm arrow-root in moderate quantities, the second, by small doses of calomel, taking care not to push it too far. The head should be shaved; when the stomach continues very irritable, blisters and effervescing draughts with small quantities of laudanum are very beneficial.

Treatment of the Febrile Stage. When congestions do not occur, a few grains of calomel and small doses of castor oil and acidulated drinks are generally sufficient. In common cases, the lancet is unnecessary, and when congestion threatens, it is a hazardous remedy. Dr. L. mentions a case in which it appeared to re-induce collapse. When congestion threatens the head, which is the chief danger, blisters to the scalp, or nape of the neck, preceded by leeches and cold lotions, and followed by calomel and mild purgatives, are proper. The same principle applies to abdominal congestions. The patient often dies with the worst form of typhus.

Dr. White remarks in this stage the redness of the tongue; he thinks this is the most proper time for the employment of the lancet with proper precautions; when there is obstinate greenish sickness he has seen great benefit from the salt emetic, repeated till nothing but the solution is rejected. He draws attention to the peculiar tendency to affection of the head, insidious in its progress, and fatal in its tendency."

Mr. Greenhow, of Newcastle, Member of the Royal College of Surgeons in London, in a late work upon

the cholera as it appeared in the towns of Newcastle and Gateshead, lays down the following indications in the treatment of this malady.

"1. The necessity of allaying irritation in the nervous expansion of the stomach and bowels.

2. To excite the vascular system, and to restore animal heat.

3. To restore the suppressed secretions.

4. To obtain healthy evacuations from the bowels and kidneys.

5. To moderate re-action, and obviate congestions, local determination, or organic inflammation.

The first indication may be considered as common to the first and second stages of the disease, the three succeeding ones relate principally to the second stage, and the last indication is peculiar to the third stage of cholera. We will consider them in the order of their arrangement.

If the stage of collapse have not yet established itself, and if with bilious diarrhœa, the patient complains much of nausea and occasional retching, the matter ejected consisting principally of undigested food, we shall probably find a dose of ipecacuanha, with or without antimony, answer the purpose, or even copious draughts of warm water will suffice to wash out thoroughly the contents of the stomach. Should the patient complain at this time of vertigo, head-ach, or pain in the abdomen, with an accelerated pulse, the greatest relief will arise from a full bleeding, proportioned, however, to the strength of the constitution, the effect produced upon the pulse and the urgency of the symptoms. As the blood flows, the pain in the abdomen and head will be relieved, and the pulse will become slower and softer :

a manifest diminution of gastric irritation will also result from it."

"When the stage of collapse has set in, we require stimulants—the mustard emetic—after this doses of calomel and opium, the latter not in too large quantities, grain doses being generally sufficient—internal stimulants, brandy perhaps the best—copious warm stimulating injections into the intestines—external heat and friction. Mr. Greenhow makes the following remarks on the application of the latter:—

'For the accomplishment of this purpose, one of the first things to be attended to, is to clothe the person of the patient in a large body-dress or shirt of thick flannel, and to envelope him, when laid in bed, in an ample supply of warm blankets; heated bodies of any convenient description, should also be constantly applied to the extremities, to the spine, and to the pit of the stomach and abdomen. Various contrivances have been made use of for applying heat to the surface. To the employment of the warm or hot bath it has been objected, that the exertion and fatigue attendant on its use, are likely to be more injurious by the exhaustion they would occasion, than could be compensated by any benefit arising from the general application of heat that would be obtained; and although warm baths have been found beneficial in India and on the Continent, in this place they have not been resorted to in the treatment of cholera. Nevertheless, I know a gentleman who suffered from cholera at Archangel, during the last Summer, and who was restored from a state of complete asphyxia by being kept in a warm bath, of a high temperature, for an hour and a half. I am sufficiently sensible of the necessity of preventing the patient from using any

voluntary exertion, and more especially of strictly preserving the horizontal position during arrested circulation, having witnessed the fatal effects of a departure from this rule in the almost immediate death of the patient; but I am yet inclined to believe, that the prejudice against the use of the warm bath is greater than necessary. The patient might surely be placed in, and removed from it, with such quickness and so little disturbance, as to obviate the objections that have been made to it. It is, however, for the most part, in hospital practice only, that the employment of this means of restoring the defective heat of the system, could be available, since the houses of the poor are seldom provided with the requisite conveniences for preparing a heated bath. Various machines have been invented for introducing heated air into the bed of the patient, but the experience of our hospitals has proved their inefficiency, I believe, without an exception, and their use has been almost entirely laid aside. Mr. Wood, a gentleman of considerable ingenuity in this place, has contrived an apparatus consisting of several thin bottles of tinned iron, which are adapted to the extremities and other parts of the body in such a manner, that when filled with warm water, and cased in bags of flannel, they have been found to answer in a satisfactory manner, the purpose of the external application of heat; but on ordinary occasions, we must content ourselves with heated irons, bricks, bags of sand, flannels, &c.

Unless a considerable quantity (of the calomel) has been already taken, a full dose, varying from 5 grains to a scruple (in truth I believe it is a matter of much indifference which) may be given; and to fulfil the fourth indication—to obtain healthy evacuations from

the bowels and kidneys—the exhibition of a purgative may soon succeed. Castor oil, I am disposed to believe, will be found the most effective and least irritating medicine of this class, but should it fail, other means ought soon to be resorted to, and injections may be employed to assist their operations. Calomel and jalap, or a purgative infusion with carb. and sulph. of magnesia, may be given at intervals until discharges are obtained from the bowels; these will probably be found feculent and bilious, and, for the present, we may consider our patient safe, especially, if, as usually happens, urine be discharged at the same time.'

It is in this, as in most other violent diseases, what we do not ourselves superintend is inefficiently performed by nurses. If the medical man has any care for his patient in the stage of collapse, he will hardly quit him till he has either recovered from, or past all earthly hope. When the stage of fever has set in, the farther use of stimulants is most pernicious, 'the analogy between this and the various forms of continued or inflammatory fever, may be considered as complete,' and the treatment must be of a corresponding description. Its leading feature is usually organic inflammation, and the treatment must be conducted on general principles. It is at the commencement of this stage, that Mr. G. warmly recommends bleeding, 'a powerful remedy—powerful when employed at the auspicious moment—powerless when used at a later or an earlier period.'

'When we are fortunate enough to be called to a patient before the pulse fails, still more before the serous evacuations commence, when he is suffering from the symptoms which so frequently occur in the

first stage—nausea or vomiting, purging of bilious matter, vertigo, head-ach, probably injected conjunctivæ, pain in the abdomen or at the pit of the stomach, with a quick, sharp, or oppressed pulse, and probably occasional cramps in the legs—a full bleeding will be found of the greatest benefit, not only in relieving the existing symptoms, but in averting the impending horrors of the second stage of the disease; this effect may perhaps yet be produced, although the pulse have become feeble and still more opppresed, but not when imperceptible. In such cases it expands and increases in strength and freedom as the blood flows. If, however, asphyxia, coldness and blueness of the extremities have fairly established themselves, the attempt to obtain blood is vain; thickened and stagnant as it is in the vessels, it cannot be made to flow, and if a few ounces be squeezed from the orifices, hangs from them in long strings, accumulating like stalactites, without producing any beneficial effects. On the contrary, it fatigues the patient, exposes him to the prejudicial influence of cold, and suspends for a time, more efficient means of relief. I must, therefore, hold bleeding in these circumstances, to be inadmissible, principally because it cannot be accomplished; and the attempt injurious, since it diverts attention from measures of less doubtful utility, because they are really practicable.'

Upon this passage, Dr. Johnson remarks, 'From what we have seen of the disease now in London, from the results of examination after death, from what we have read of the practice in the north, from the conclusion derived from reasoning on general principles, and from our experience in India, we do most conscientiously believe, that the remedy which we

first proposed and employed for the cholera in Indostan, we mean blood-letting, is, after all, one of the safest and best, when judiciously timed and applied.'

'The chances of recovery,' says Mr. G. 'in cases of cholera, must depend upon the stage of the disease; the duration of the attack before the employment of judicious remedies, its severity, and upon the age, constitution, and previous state of health of the patient.

It has been seen that when the patient comes under treatment in the early stage of the disease, before the pulse and animal heat fail, his recovery may be calculated upon with much certainty. The abstraction of blood if indicated, a single of dose of calomel and opium, succeeded by castor oil, will frequently restore him to health in a few hours.

When the more formidable symptoms of the second stage have set in with great severity, the chances of recovery are, in all cases, very precarious; and if the constitution be enfeebled by previous disease, or old age, the case may be considered as nearly hopeless. In childhood, youth, and the vigor of life, an active and diligent use of remedies will often be attended with complete success; and it is in these cases that we are stimulated in our exertions by the satisfaction of witnessing their utility. The warmth of the body is in the first place restored; the pulse becomes perceptible, it increases in strength and volume, and the natural color of the skin generally returns; the secretions become re-established, and the patient is brought into a state of safety; for, with vigilance, the succeeding symptoms may, with much certainty, be obviated. All this, however, does not go on uninterruptedly. The patient has many uneasy sensations during his recovery from the stage of asphyxia; he becomes

restless, complains of pain at the stomach, with occasional nausea, or even vomiting. Still there is restored action of the heart and arteries, the functions of life are going forward, and we may fairly anticipate that, under judicious direction, they will lead to the entire restoration of the patient. But when the restorative efforts are opposed by previous organic disease, general feebleness of constitution, or the worn-out energies of age, we must not calculate too confidently upon any imperfect re-action that may be induced. Heat and pulse may return, the former perfectly, the latter in degreee only; the spasms and watery discharges may cease; something approaching to natural excretions may even take place, and yet the patient will not unfrequently sink; not from violent re-action, or the development of local inflammation, but from want of energy in the vital powers to carry forward the attempts at restoration which seem so happily commenced.

The danger of the case is by no means dependant upon the quantity of matter discharged from the stomach and bowels. In some of the worst cases, this is not very considerable, and in some of the most successful, it has been very great. Neither is cramp or spasm a certain criterion. Many fatal cases have occurred, wherein it was nearly entirely absent, or soon ceased. The great danger appears to arise from imperfect or suspended circulation. Let this be restored fully, and the rest is within our control. On this circumstance, mainly, then, will rest our judgment as to the probable result of our efforts, though all the concomitant circumstances of the case must be taken into the account."

Dr. Kirk, of Greenock, whose account of the symptoms of the cholera asphyxia we have already quoted, and who appears to have been indefatigable in his inquiries as to the best method of treating the disease, thus alludes to the subject :—

"The question as to the general propriety of bloodletting, is at the same time a very difficult and important one. A great proportion of British practitioners, who have treated the disease, have shown a partiality to it. The reasoning leading to the practice is specious, but I fear superficial. We are told, take away a portion of the circulation, and you relieve it of a part of its load, and give nature freer play ; we unload the system, and induce the surcharged vessels to put on a new and livelier action. Now, in accordance to the theoretical views I have ventured to adduce upon the disease, it will be seen, that a return to healthy circulation will not result from abstracting, or adding, a portion of the circulating mass. The cessation of arterial action is not dependent on the state of the fluids, but on determinate derangement in the sensorial power ; the result of a morbid poison, by which the machinery of the circulation has been impaired in its healthy action. I speak of the stage of collapse, or the period which immediately precedes it. In that stage, I can see no advantage to result from withdrawing a small portion of blood ; and in 99 out of a hundred cases, a small portion can only be withdrawn. The sensorial derangement will not be relieved by the evacuation, and the system, already depressed by excessive discharges of the most debilitating kind, will be plunged still deeper into that fatal weakness which is the principal characteristic of this disease. The evacuations of advanced cholera,

are not the discharges of alvine matters, or of the ordinary fluids of the bowels. They are largely composed of the serous and saline parts of the blood; and consequently produce a destruction of the strength, as swift as it is complete.

I entertain the highest respect for some of the eminent supporters of bleeding; but, after conscientious attention to the subject, and watching the practice in various hands, I feel myself bound to declare my conviction. If the patient is attended within an hour or two of the attack, and the pulse is strong, and the arterial system in a state of excitement, and he is yet unreduced by the debilitating dejections of choleric diarrhœa and vomiting, bleeding is demanded by the ordinary rules of our art, which indicate venesection as the best mode of relieving arterial irritation and high action. But when was it proposed till the present day, to relieve a condition of the extremest depression, and of no arterial excitement, by the abstraction of the principal vital fluid? The blood is unnaturally thickened, to be sure, grumous and probably carbonized; but will the removing of a small column of venous blood change the condition of the rest of the sanguineous fluid, or give energy to those nerves which, under a poisoned influence, have ceased to perform their important functions, of giving life, action, and energy to the whole system?

I grant, most freely, that in the first and second premonitory stages, bleeding may do good; for then the arterial system is in a state of excitement, and the poison has not fixed its deadly fangs on the powers of life itself. But then, even, I would be cautious. A depressing influence is in the constitution, which may every hour develope itself as most deadly in its power

and tendencies. Let there be withdrawn only so much as to diminish somewhat the energy of the circulation; but do not trench on the *vis vitæ*. Ever recollect that a poison is within which nature is struggling to oppose, and by instituting increased action, seeks to free herself from her insalubrious oppressor. Nor is this the language of theory only. I have seen many attempts at bleeding in collapse, but never to any other purpose but apparent harm; and in numerous instances of the last stage of the premonitory symptoms, I have thought collapse induced by injudicious bleeding. I was favored with the perusal of a case by a medical friend near Musselburgh, which, under appropriate treatment, and without bleeding, I have no hesitation in saying would have done well; but from the apparent success of another, and a published case, which had excited a good deal of attention, my friend thought proper to repeat the practice, and lost his patient. But this solitary case need not be quoted; for in the practice I have seen, I have bitterly to lament the injudicious use of the lancet in severe premonitory cases.

There is still a question among practical men, if a state of excitement always precedes the attack. I think it does. In all cases I have had it in my power to observe from the first, it has done so. The poison of cholera in this country does not seem sufficiently energetic to destroy the constitution in a moment, as it is said it sometimes does in India. Nature struggles for emancipation, generally for days together, and institutes new actions, and various discharges, to relieve herself of her load. It is in this condition that the injudicious practice of giving a mustard emetic is frequently resorted to. If an emetic is indicated, the

symptoms giving reason to suppose that sordes are to be discharged from the stomach, common salt and water will be the best emetic; it will not irritate and stimulate. But in general, copious draughts of warm water will answer the purpose better. Upon the whole, I entertain much doubt of the propriety of emetics in the advanced stages of cholera.

I come now to consider the important subject of the use of calomel in this disease. All British practitioners, who have treated the complaint, have resorted to this chymical preparation. I am not sure that in general, calomel is prescribed upon any principle; but rather empirically, and without very definite conclusions. I entertain no doubt of the propriety of its use, and have for the advantage of those who have not seen much of cholera, given in the appendix, numerous cases illustrative of the use of it. Perhaps, in our present knowledge of the nature of the disease, we must speak with caution in endeavoring to explain the rationale of its beneficial action. But this is clear, that scarcely any substance will lie more agreeably on the stomach than calomel, in this disease; for I have been surprised to see repeated doses of calomel retained, when all other things were vomited. Dr. Lawrie says that he knows, from personal experience, that calomel will remain on the stomach when nothing else will; and my experience of it has been exactly to the same purpose.

Thus there is no objection to its use, on the score of local irritation; and from its action on the system as an active mercurial, we may expect it to expedite the return of the secretions of the bowels, liver and kidneys—which, when obtained, our patient is safe. In England, I seldom saw ptyalism produced by calomel; but here, where we have the advantage in our hospit-

als of a capital system of heating, our collapse wards being seldom under 75 deg. Fahrenheit, all the cases which recover are decidedly under the influence of mercury. Thus does the effect of this excellent application of heat not only act mechanically in restoring that which nature has ceased to supply, but it also gives increased effect to the appropriate medicines. Even after enlarged experience in this disease, I think calomel will retain its place among the remedies used for its removal.

Opium is the next remedy of importance to which we have to allude. This powerful drug has been too indiscriminately used, in the treatment of cholera; and the scientific practitioners with whom I have had intercourse, now use it with much greater caution than they did when they commenced the treatment of this disease. In the appendix will be found several cases, explaining the mode in which the English practitioners now use it.

Several considerations press upon us in reflecting on the use of this drug in cholera. With what intention do we administer it? It is a stimulant. But have we not pure stimulants of a kind which do not partake of its narcotic nature, and which will give excitement, and act as cordials, without either a depressing or narcotic effect upon the nervous system? Upon the whole, it is my opinion that the use of opium ought to be confined to its effects in obviating spasm, and when spasm does not exist, if a stimulant is indicated, the pure vinous diffusible stimuli seem more appropriate. We must not forget, however, how useful it may be, from its soothing and astringent qualities, in moderating the discharges; but let us also remember, that more than half the deaths of cholera are in its final

congestive fever, and that the principal symptom of that fever is congestion of the head : and consequently that the accumulated effects of a narcotic stimulant is much to be dreaded and avoided.

I would then, very earnestly expostulate against any thing like a liberal use of this drug in the disease ; and would only recommend it in cautious doses, for the purpose of moderating the discharges and subduing spasms.

Brandy comes next in the list of the remedies employed in cholera ; and as in all cases of collapse I have seen treated by others it has been employed, I must inquire into the propriety of its use, with some caution and accuracy. Does the pathological history of this disease indicate the propriety of the free use of a diffusible stimulant ? I appeal to all those who have witnessed dissections of cholera, if I am not correct in stating that the great and leading facts elicited on the examinations, were, that the important viscera, and even the brain, showed most demonstrably that they had been subjected to high action. I have witnessed the dissection of six bodies in the disease. In all of these, demonstrations of inflammatory action were most clearly evinced, and inflammation, too, of the nerves, plexuses, and membranes, which could not be disputed ; and that man must be hardy indeed, who can look at these details, and say that in its early stages, this is not a disease of inflammatory action. In the early stages, this action can be subdued ; and it is this important fact to which I have labored to call the attention of the country. But the organs principally affected, the gastric ones, it is known to every tyro, most unhappily do not bear such free bleedings as other important inflammations.

I make this remark, because it may be urged, why do you give us so many cautions about blood-letting, when you acknowledge with the same breath, that it is a disease of inflammation? I answer to this, that it is only so in its early stages. Pass the bourne of the second premonitory stage, and the evil is consummated. You have no longer a case in which inflammation alone is to be considered, but one in which all the functions of nature have lost their powers; and where, alas! you can only temporize, and look on, and watch for, and assist the healing power of nature.

Is brandy, then, a remedy in any stage of this disease? In the report, I have permitted its use in small quantities, not venturing to make an innovation on the established practice by avoiding it altogether; but it is now my duty to say decidedly, that the cup of brandy you perpetually see at the head of the cholera patient, cannot be given him innocuously. His bowels are in general in a state of positive high action and inflammation; so are his brain and spinal marrow, and so are even the vascular systems of the greater nerves. What do we gain by brandy? We obtain a temporary diffused excitement from its stimulant powers, and a kind of soothing of the sensations from its narcotic influence; and can these effects produce any change in that morbid condition of the system, which we have seen, is cause of cholera? I will be told that brandy, by the mouth and by enemata, have often and evidently done good. Let, then, this be its restricted use. Never give it, either in the one mode or the other, but in those extreme cases of disease where even the temporary fillip to nature, which it can give, may be courted; and though it is

to come into contact with and irritate diseased tissues, still perhaps, in these extreme circumstances, its use may be indicated. But in the premonitory stages, while action, sometimes high action, still exists,—and when we know many vital parts are highly irritated, and that our business is to subdue that action,—I never see the glass of brandy at the patient's head without a shudder. It is a fact that intelligent practitioners are every day becoming more and more cautious of the use of this stimulant. I feel that I have ventured far in this wholesale condemnation of it; but I confidently anticipate the decision, in my favor, of those who are to come after me, inasmuch as my views are certainly founded in the ascertained pathology of the disease. When I think a cordial strongly indicated, I am in the habit of preferring the pure wines, the irritation to the inflamed tissues, from their use, being less to be dreaded than the sharp and naked points of alcohol.

The next great remedy employed in the cure of this disease, is the application of heat. The restoration of the natural heat, so totally lost in the collapsed stage, is suggested by the most natural and evident reasons. The only question is, what is the best mode of effecting this object? I shall first allude to the most approved modes of applying heat in hospital practice. In this respect I thought the English hospitals very deficient. One of the Edinburgh hospitals is admirably managed, by a plentiful supply of heated air, and by steam heated mattresses. The Vennel hospital of Greenock is heated by flues communicating with two furnances, which keep the whole wards constantly at a temperature of from 65 to 75 degrees Fahrenheit. We have also a plentiful

supply of tin vessels, fitted to the shape of the various parts of the body—the abdomen, the arms, the legs, and the chest—by which the heat of warm water is easily conveyed to any of these parts. We have also always in readiness a plentiful supply of heated sand for sand bags. The sand bags are in general made too large, in consequence of which they are heavy and oppressive. They should be flattened bags, and contain only a thickness of an inch and a half of sand.

The advantage of the general heating of cholera wards is prodigious. I have already explained how much more efficient it makes the operation of the mercurial medicines. We have never used the air baths here—perhaps because I entertain the idea that the application of heat by this slow conductor is not the most efficient mode of communicating it, and that the necessary machine is inconvenient during the frequent dejections and vomiting of the patient. But in all hospitals a ward should exist, removed from the influence of the stoves, in which to place the patients when the stage of consecutive fever has effected them. In private we have only in our power to use the sand bags, tins, and bottles, which can be procured; and to take care to procure a plentiful supply of bed-clothes, and as large fires as possible in the grates. The arms, which are apt in jactitation to be perpetually exposed, should be covered to the shoulders with worsted stockings. In the country, where hospitals cannot be procured with stoves, it is astonishing what perseverance will do in accomplishing our purpose by very slender means. In the Appendix will be found a case, by Dr. Morson, which occurred in a pitman's house, near Newcastle: and

which shows very well how much can be done by the anxious application of ordinary domestic means.

All practitioners agree that rubbing is of the greatest importance. The excitement which it gives to those extreme vessels, which, in this disease, seem so peculiarly to lose their tone, indicates its utility, and wherever assistance can be procured it should not be neglected. When Dr. Mollison of Edinburgh was in Newcastle, he cured many cases by energetic and continued rubbing, which in all probability would not have recovered without it.

We must next take into consideration the claims of counter irritation, to the rank of a valuable remedial agent in this disease. It is evident from the views given, and the facts stated, that counter-irritation is clearly indicated in this disease. I regret exceedingly that none of the dissections I have been enabled to give, show the condition of the spine in cholera. Several friends of mine, who have examined the spine, say that the membranes of the spinal marrow were inflamed. If this is the case, undoubtedly a mode by which inflammatory action will be subdued, in this immensely influential part, without at the same time debilitating the general frame, is of the utmost consequence. With this view, I have three times used the actual cautery to extremely bad cases, but I regret to say in none of them was I successful. They were, however, the worst description of cases, and do not stagger my belief in the utility of the remedy, if applied to a curable case. The best place to apply the cautery seems the lower part of the back of the head, particularly where it joins the spine, and along the spine itself. Dr. Barry says that Dr. Lange, at Cronstadt, by the cautery cured 12 cases out of

14. I am skeptical of this, but am willing to believe, that much advantage may spring from this very decided mode of counter-irritation.

The next effectual and most efficacious mode of applying a violent irritant, is by placing on the skin a cloth newly wrung out of boiling water. This mode I am in the habit of regularly practising, and often with benefit. The blister is raised instantaneously, and in the pains of the hypogastric region, so common in this disease, it in general gives relief in a few minutes. The next speediest mode is the infusion of cantharides in strongest ascetic acid, which will raise an effectual blister on the scalp, or other part of the skin, in a few minutes.

I know nothing of the effects of galvanism, never having seen it adequately applied in this disease. I confess that, from the nature of this agent, I do not expect it will be eventually found useful. The desideratum in this disease is, not the restoration of vital or nervous power, but the cure or alteration in the diseased state of the nervous power. Now, the proved effects of galvanism are only, that it is able, for a time, to act as a substitute for the nervous power. That it can change unhealthy actions of that power we have no fact to convice us. In Ceylon, I understand, a successful case took place from its use, though it was only directed through the lungs; and I have sent to the neighborhood of Musselburgh a powerful galvanic battery, which, I understand, they have put to use, and speak favorably of the results. But I have heard of several unsuccessful experiments in this neighborhood lately. The remedy seems, at first sight, adapted to the disease; but even Dr. Philip, who might have been pardoned though he had hoped too much from

galvanism, says—'I cannot overlook two circumstances, which seem, in some degree, to render the expectations from it less sanguine. That when the nervous power is merely withdrawn, it can supply its place, rendering the functions of the organ as perfect as when that power was entire, has been ascertained; but in the disease before us, we have reason to fear that the failure does not consist in the mere loss of nervous power, but that the operation of the poison, or the organs of that power, diffuses the influence of the poison itself throughout the system. The other circumstance is, that if it be capable of counteracting the offending cause, it is doubtful whether the degree in which it can be safely employed is sufficient for this purpose. In supporting the function of a vital organ, when it is deprived of its nervous power, a very considerable galvanic power is necessary. It is not to be supposed, in our clumsy mode of applying it, that the same degree of power will be sufficient, as when applied by nature herself. This objection, however, only relates to the degree of benefit to be expected from it. The way in which it was employed in my experiments, is not the proper mode of applying it in the disease before us. Wires, from the positive end of the trough, should be applied to various parts of the head, and along the whole course of the spine, and wires from the negative end to various parts of the chest and abdomen.'

Other remedies have been lately proposed, some of them by high authority. A distinguished foreigner, who visited this country lately for the purpose of attending to this disease, proposed, and carried into effect, the process of injecting the veins with a solution of opium. I am not sure of the theory on which he

expected relief from this process; but I have heard that he had experienced great benefit from it in tetanic and other violent nervous affections. It totally failed, his patients having sunk as if no remedy had been used. In Newcastle, where I had the pleasure of visiting him, I predicted to my friends that this would certainly be the result of the experiment. The narcotic effect of opium was not to be expected to have power to change the altered state of fluids to that of health, nor to banish the distressing and morbid influence settled on the nerves, and slow as the circulation is in collapse, it was hardly to be expected that his remedy was ever to reach the heart and vital parts of the system. In my report to the Board, I have stated my conviction of the utility of the tobacco enema; and I have given in the Appendix a series of cases by Mr. Baird, and an essay illustrative of his theory in using it. He prescribes it under the conviction that cholera is a disease of spasm of the important viscera, particularly the gall bladder; and that the relaxing effect of the tobacco subdues this spasm, gives free play to the powers of life, enables the circulation to recommence, and the secretions to flow.

I am not prepared to dispute this doctrine of spasm to a certain extent. It may be one of the effects of the poison to cause spasm of the important vicera. We see the bladder contracted, even in death, in every dissection of cholera; and in two cases I have found the gall duct impervious (in four cases it was patent.) This closure must have taken place from effusion of coagulable lymph shutting it up in the first high action of the disease. I do not think this closure, in the dead state, could have been from spasm. But

I am disposed to attribute the good effects of the tobacco, rather to some specific power in this peculiar drug, by which it counteracts the poison of cholera, and reduces, by its depressing influence, the high action of the vessels, thus inducing a new and salutary action. But be the theory as it may, the practice is good, and I earnestly invite the profession to give it a fair trial. I am convinced, that, after the first stage of this disease, the bile ceases to be formed. No doubt, we always find the gall bladder full. But I believe this filling to have taken place at the commencement of the disease. There never appears any yellowness of the skin in any of the secretions, during the progress of cholera, in the perspiration, the urine, or the saliva. There is no proof of bilious absorption, which infallibly would have existed if bile had been formed. I believe, in the advanced stages of cholera, that a total suspension of bilious secretion takes place as well as urine; and that the reason we generally find the gall bladder full, is, that the debilitated organ cannot propel its contents. The urinary bladder is differently situated. It is a voluntary organ to a great extent: and I have already explained that the voluntary muscles do not seem much under the influence of this poison. The last formed portions of urine, in the state of health, are thus expelled, and afterwards none forms. I have stated that coagulable lymph is in all probability the cause of the occasional closure of the gall duct. That, in the early stages of this disease, this part of the blood (the lymph) is largely separated, is proved by the dissection of M'Millan, narrated in the page 132 of this work, where a lengthened polypus was found in the whole course of the longitudnal sinus, and one in each ventrical of the heart.

In the Appendix to Dr. Kirk's practical observations on Cholera Asphyxia, the following important note is found.

Sketch of the Practice of three eminent and excellent Practitioners of Newcastle.

I shall now lay before the public a short summary of what I understood to be the treatment of this disease, by a very eminent and excellent practical surgeon, Mr. John Fyfe, of Newcastle. At the time I was in Newcastle, he had attended 579 cases of cholera; and in all these, he says that collapse never came on till after profuse serous discharge from the bowels. Mr. Fyfe relies very much on stimulating enemata; and he says that they seldom fail to produce reaction in its most salutary form, attended by less congestion than that which followed collapse of longer duration, in which stimuli had been withheld, or when the most diffusible stimuli had been given by the mouth. When watery diarrhœa exists, tinged with healthy secretions, he has arrested it often at once by opium; and in nineteen cases out of twenty, convalescence has followed. But if the disease has advanced, he then gave repeated doses of calomel: moderated the discharges by opium, and softened the pulse by bleeding, if necessary. If the disease proceeds to vomiting, purging, and cramp, Mr. Fyfe prescribes a mustard emetic, followed by copious draughts of warm water, friction, and the proper regulation of heat. If the pulse is firm, blood is taken to the extent the pulse can bear. Calomel and opium are then used, and diluents allowed. In collapse, Mr. Fyfe objects to large opiates, and also to general

bleeding; but, in general, he gives relief by throwing into the intestines three pounds of very hot water, six ounces of brandy, and occasionally two drachms of laudanum. It will be frequently necessary to withdraw these injections by a tube—they come off cold—and to repeat them either with hot water alone, or with laudanum, if the irritability of the stomach continues. In this stage Mr. Fyfe uses brandy liberally. He treats the reactive fever in the same way Mr. Frost does, as stated below, and I have already alluded to some of his ingenious adaptations in my report. Mr. Fyfe thinks the period of the incubation of the morbific germ of cholera seems to vary from four hours to eight days. Mr. Fyfe is also of opinion that the effluvia, from the excretions of an individual having diarrhœa cholerica, may communicate to another predisposed the most developed form of the disease.

Mr. Frost, of Newcastle, treated 500 cases of cholera, and is a person of high qualifications, a calm thinker, and an excellent practioner. I think the profession will be glad to hear his opinion and practice in the disease, which I will give as accurately as I can recollect a conversation held with that gentleman at Newburn. He said that he conceived it a malignant congestive fever,—and if English physicians had seen this disease without reading Barry, Bell, Orton, and Lefevre, they would have treated it on scientific principles, and according to the rules of British art. They would have given no astringents. The catch-word of 'stop the diarrhœa' would never have existed. He stopped it, but in a far different method, viz., by calomel, castor oil, and very minute doses of opium; say five grains calomel, one opium,

and two antimonial powder to begin with, several times repeated. If there is headach, and giddiness, and the pulse is of sufficient tone at the commencement,—if the pulse is from eighty to a hundred, bleed moderately. But the bleeding must be cautious; for in this, as in all cases of intestinal irritation, bleeding cannot be largely practised with safety. If the stomach is much loaded, or there is nausea, give a draught of warm water to excite vomiting. If that does not effect it, you may give salt and water, or ipecacuanha, or a dose of castor oil, which may be succeeded by a diaphoretic. This will open the skin. Next day calomel and castor oil again. If the castor oil will not stay on the stomach, the best substitute is magnesia and rhubarb. If the patient gets colder, then fill the large intestines with warm water from the forcing-pump; and if you have any idea that the bowels are not discharged, then put salt in the water. After this invariable stage of diarrhœa comes that of collapse. In every case where correct information could be obtained, diarrhœa has preceded it. He gives warm water to induce vomiting; injections of hot water; the careful regulation of heat; twenty drops of laudanum to allay irritation; two grains of calomel, and one-sixth of a grain of opium, evey three hours, for three times, and then castor oil. In one case, for instance, under this treatment, the pulse rose to eighty, and the patient became warm. Eight ounces of blood were taken from the arm. He passed no urine for 48 hours. Mr. Frost went on with the calomel, and next day the urine returned, and he recovered after a mild consecutive fever. He has never practised stimulation. The consecutive fever of children is almost always attended with the same symp-

toms as hydrocephalus acutus. The hydrargyrus cum creta is the best remedy for them. He has seldom been able to induce ptyalism. Worms are very frequently vomited. They are always dead. The injesta of cholera seem poisonous to them. At Newburn, a village where Mr. Frost conducted a great part of the practice, two hundred and seventy-three cases of the disease occurred up till the day on which I visited Newburn with Mr. Frost. Fifty of these cases were fatal. The whole inhabitants of the village were five hundred and fifty, one hundred and forty-one families, and one hundred and thirty-four houses. This is truly appalling. In general, even when the cold stage is incomplete, consecutive fever sets in—there is much giddiness, pain of the head, and stupor. He has always treated this stage with laxatives. Mustard sinapisms applied to the neck, relieve the head; to the epigastrium, the stomach. They have often been costive, but it has not been difficult to manage the bowels. Leeching to the head was frequently resorted to. Now, I ask the reader to compare the success of this treatment with that in the village of Hartly, where brandy and opium were used, and where, out of *thirty four cases*, *thirty-two died*.

I beg now to give the experience in this disease of an excellent friend, Mr. D. M'Allum. His acuteness and talent are only equalled by the excellence of his heart and the soundness of his principles.

Dear Sir,—Imperfect as naturally must be, from my limited opportunities, my capability of replying to your queries respecting cholera; yet so far as my information can contribute, in the slightest degree, towards the furtherance of your laudable object, I am happy to afford it.

In looking over the list of queries proposed, I do not see that my individual experience can afford any information worth recording, but upon the last, viz., the treatment found most successful. In reference to treatment, I would divide this disease into three stages. 1st, That of excitement, or irritation, wherein the patient throws or purges freely, generally accompanied by severe spasmodic action of the muscles of the legs and bowels: the pulse distinctly perceptible, quick, sharp, and, in some subjects, full. This stage does not last beyond a few hours, passing on to, 2dly, The stage of collapse; wherein the pulse becomes imperceptible, the extremities cold, the breathing more laborious, the countenance more sunk, especially the eye, which assumes a leaden hue; and, 3dly, The stage of reaction. He who is happy enough to be called in during the first stage, will not hesitate, if the patient have any vigor of constitution, to bleed freely, premising, or using simultaneously, a gentle emetic of ipecacuanha, or salt and water, following this by an anodyne injection. I then administer a pill of two grains of calomel, and one-sixth of a grain of opium, every half hour, with chalk mixture, or saline julap, in a state of effervescence for a few hours, until we have dejections evidently combined with bile. To assist this operation, and especially if the vomiting be still severe, I administer warm emollient injections, and afterwards treat as in ordinary continued fever. In this stage of collapse, or approaching to it, I give a tea-spoonful of mustard in a little warm water, every five minutes, till I produce vomiting; at the same moment I order enemata of very warm water and soap, without reference to quantity, endeavoring to throw up as much as ever I can.

These means I find more successful in restoring heat than any *external* means; but which I do not, nevertheless, neglect, ordering hot applications to the feet, hands, and arm-pits, and that the patient be well rubbed with a stimulating liniment of spirits of turpentine, tincture of capsicum, mixed with camphorated oil; I then apply the hot air, both which I continue at a temperature about 84, for two hours or more. In the mean time, as soon as the emetic has operated, I give six grains calomel, one-fourth of a grain of opium, every quarter of an hour, with two tablespoonfuls of a mixture containing compound spirit of ammonia three drachms, spirits of mindererus three drachms, mixed with hot coffee, giving warm liquids very freely and frequently. In this stage I have tried bleeding repeatedly, but without benefit; indeed, it seemed to me to precipitate the fate of the patient. The enemata ought to be repeated frequently until reaction takes place. The third stage, viz., of reaction, requires no difference of treatment from that of our usual typhus mitior, excepting that bleeding should be had recourse to with *very great caution*, as I believe, by its too free use in improper cases, the stage of collapse has returned, and the patient sunk. There is generally a tendency to congestion, either of the brain or liver, which requires the application of leeches and blisters. The mortality in my own practice was during the first three weeks—exactly two to one recovered; but since January commenced I have had seven cases, most of them applying early; six of them are convalescing, and one dead. In Wallsend township, amid a population of 3000, there have hitherto occurred 15 cases and 4 deaths.

In the above observations I have merely referred

to my own individual practice, and its results. Although I have had three patients in one house, I have met with no fact that could confirm the doctrine of contagion.

Yours, respectfully,

D. M'ALLUM.

Blackett Square, Saturday, Jan. 14th, 1832.

TREATMENT OF THE CHOLERA IN CANADA AND THE UNITED STATES.

The first appearance on this continent of the epidemic cholera, was in Canada, at Quebec and Montreal.

At these places, it was noticed early in June, 1832. The first case published as epidemic cholera, occurred at Quebec the 8th of June, and in a day or two after, several cases occurred at Montreal, and in the course of a very short time, it raged in both places with a violence unknown in Europe, and unprecedented in Asia.

It ought, however, to be remarked, that according to the testimony of many of the physicians in Canada, a similar disease was noticed there early in the spring, and before any arrival of vessels from Europe. So malignant were these cases that occurred early in the spring at Montreal, that some of the medical men believed them to be cases of real Asiatic cholera, and expected to see that disease prevail, but it disappeared in a few days. When it did appear as an epidemic, it came unexpectedly, and so sudden and violent was the attack, and so numerous were its victims, and so wretchedly circumstanced were the emigrants from Ireland, among whom it most prevailed, that at first, but little was done, and but little could be done, as respects the administration of remedies. Hundreds died without any medical aid whatever. After awhile, better accommodations were obtained for the sick, and when the disease attacked the native inhabitants of the place, a more systematic course of treatment was adopted, and according to the state-

ments of the physicians of Montreal, with very great success.

A few of the medical men of Montreal have published brief statements of the practice they adopted in the cholera, and which they found on trial, and on comparison with other methods of treatment, to be most successful. Their plans of treatment, I shall give in their own words.

Dr. Caldwell, an eminent physician of Montreal, thus writes respecting the cholera, to Dr. Mc Naughton, of Albany:—

"*Montreal, June* 24, 1832.

Dear Sir,—

I am just recovering from an attack of spasmodic cholera, and am still so weak as to be unable to enter into a minute detail; but so far as my strength will permit, will answer the queries you have put.

And with regard to the first, have to remark, that although it first appeared amongst the emigrants, the inhabitants have since suffered in much greater ratio.

2d. In the first instance, it was principally confined to the lower orders, but for the last ten days it has seized, indiscriminately, all classes.

3d. If you are acquainted with the localities of Montreal, you will recollect a small creek or rivulet that runs immediately in the rear of the town, and very nearly throughout its whole extent from east to west; it has undoubtedly confined itself in a great measure to the line of that channel, and the small alleys running up from it; so much so, that I think I am perfectly correct in stating, that 90 cases out of the 100 have occurred on the contiguous banks or alleys running from them.

4th. Two-thirds of the medical men have been attacked, and I believe all have felt its influence more or less. There has been only one death, but that is accounted for from their being enabled to seize the first moment of attack, and not to any immunity they otherwise enjoyed.

5th. The duration of the disease has been from four to twenty-four hours; the most frequent termination, however, from seven to twelve. Adult age has exhibited a much greater susceptibility to the disease than early life, and this may be accounted for from the apprehensions of the latter not being so easily excited. Fear unquestionably predisposes most powerfully, and such is the effect of the epidemic influence on the nervous system, that all are more or less affected by it.

6th. We have not had it in our power to carry the post mortem examinations to any great extent; in the first place, from the increasing demand for medical assistance, night and day, and latterly from the great number of medical gentlemen being laid up. In the few cases that have been examined, great venous congestion has existed throughout the abdominal viscera, more particularly the stomach, intestinal canal, and mesentery; and in several instances where the disease has been protracted for 24 or 36 hours, sphacelus had taken place. I have not had an opportunity of seeing the head opened.

With regard to the treatment, you will see an article in the Gazette of last week, by Dr. Arnoldi, which strikes me as being the most rational. There is another by Dr. Stephenson, in the Courant of yesterday, but there is this objection to the means he suggests, that in genuine spasmodic cholera, the irritation of

the stomach is so great, that liquids of no kind will be retained for an instant.

In my own practice, I confess to you, and I would strongly impress it on your mind, that I have derived more advantage from what may be called preliminary treatment, than from that during the actual attack. Cholera is invariably preceded by symptoms of gastric derangement, such as constriction or obstruction of the præcordia, or a sense of corrugation of the upper orifice of the stomach, loss of appetite, white furred tongue, nausea, occasionally slight diarrhœa, thrilling sensations of heat through the bowels and different parts of the body. These symptoms may continue from a few hours, to a day or two, according to the degree of predisposition and susceptibility of the individual, and also the degree of concentration that may exist in the atmospherical influence at the time. The moment these symptoms showed themselves, I directed the patients instantly to send to me, and gave them from gr. x to xv of hydrag. cum creta, according to the age and strength of the patient, and in two hours followed it by tart. potassæ dr. ii. in a little warm veal or chicken broth, and repeated it every second hour, until it operated freely. Nothing seemed to allay the gastric irritation so well as the soluble tartar. In many instances it seemed to act as a charm, and I do not know a single instance of any one who went through the influence of this treatment that was subsequently attacked with cholera. In some instances it was necessary probably to repeat it once or twice; and where the tongue was much loaded, I added two or three grains of the submuriate to it.

In the convalescent stage, if much disposition to spasmodic action remained, I have derived great ad-

vantage from the cajuput oil, in doses of from 15 to 25 drops, particularly in females, mixed with laudanum, magnesia, &c. according as circumstances indicated. These hints will, I trust, enable you to meet the disease, should it unfortunately find its way to your city, with more confidence than I did at the outset. The epidemic has for the last two days completely subsided, and has been succeeded by fever of a low synochus form.

Believe me, dear sir, very truly yours,

W. CALDWELL."

Dr. Nelson, Member of the Medical Board and Commissioner of Health of Montreal, thus describes the treatment which he found most successful.

Treatment.—First Symptom. The principal medium through which remedial means can be applied, is the stomach. We are therefore compelled to look to this organ first; and as no remedy can be of service there unless it be retained, we must, before all other things, arrest the vomiting, if there be any, and suffer the stomach to become perfectly calm before any other medicine or substance be introduced, lest by so doing we arouse the evil just subdued. As relates to the stomach, there are two distinct stages in the disease, and on a just appreciation of these will the success of the practitioner depend. The first is the vomiting, the second is the stage of collapse, or sinking, when all vomiting shall have ceased. Now, as the only known means to stop vomiting in this disease, and many others, is to paralyse the stomach, we must carefully bear in mind, while prescribing for the first, not to overdo the thing, lest when we re-

quire the energies of the stomach, in the second stage, we find them irrevocably lost in a collapse, which is joined to the common sinking of all parts of the body into death, (the sensorium excepted). Here resides the first and greatest secret in prescribing for a cholera patient; and which, to the unobserving multitude, has occasioned so much apparent discrepancy in the treatment of different practitioners. In the first stage, the most sedative treatment is essential; while in the second, the very opposite, that of excitation.

How to paralyse the stomach, and consequently to arrest the vomiting. Three very particular circumstances are to be borne in mind,—1st, the remedy,—2d, how to be administered,—3d, comportment of the patient. After all that has been said, it will be found that every practitioner from the Ganges to the Vistula, has been forced, whatever his preconceived notions may have been, to look to opium as his anchor of hope; but it is to be regretted that a remedy so good, so perfect from mal-administration, should have been turned into a two-edged sword, at once curing and killing the patient. Opium has been given in every form, and in various combinations; this last is the error, as the pathological state of the stomach will readily account for. There is such an inordinate sensitiveness at this stage, in this organ, that it will not suffer scarcely the smallest bulk of any substance; how injudicious then to augment the size of the remedy, by the addition of medicated waters, in themselves useless; and how much more unscientific to add a stimulant to your sedative, when the latter effect is the object of the prescription. Let the remedy then be a sedative, and not a stimulant; give opi-

um, and let the dose be concentrated to the smallest size; give one grain of solid opium, it must be swallowed dry: if that be rejected, give a second, and so on to a third; it will rarely happen if the 3d circumstance be observed, that a fourth dose shall be required. One grain of opium is so small a body, that the stomach can easily bear it, while the same remedy, given in form of a draught, from size alone shall be injurious.

3d. The patient is naturally restless, and any motion of the body is more or less communicated to the stomach, and it has been observed, times out of number, that the mere turning round of the patient has so acted on the stomach as to set it again in operation. Motion of the body may so act on the abdominal surface of the stomach, as to affect the internal with a sensation of foreign substance, and thus account for the effect. To sum up, for the vomiting stage, give one grain of opium, and give it dry; give nothing else till vomiting shall have ceased for several hours, and keep the patient in the most quiescent state possible. During all this time, the patient suffers intolerable thirst; this he must bear with. Drink will be returned almost before it reach the stomach, and cannot relieve the symptom for which it was given, whilst it gives the patient one more dreadful convulsion, each of which hurries him to his end with a tenfold degree of velocity. Bear in mind, that one grain of opium is as effectual in arresting the irritability of the stomach, as ten grains, while the latter dose would not only do the same, but also paralyse the stomach beyond the term of resuscitation. The abuse of opium too frequently occurred at Montreal."

Second Stage.—All is now quiet, and now is the time to give stimuli. Small doses of warm brandy, warm punch, æther or ammonia; but be careful to choose such as are palatable to the patient.

The second symptom to be analyzed is the asphyxiated state of the extreme parts of the body, and also the apoplectic state, as the French call it, of the more central viscera. This asphyxia is known, as the term implies, by the cessation of circulation, and blueness and coldness of the surface. Fortunately it is not difficult to appreciate the indication, though one may not be so sure of its success. The cause is perhaps internal, but unknown: but the wet state of the surface, by evaporation, contributes more rapidly to cool down to the term of death. While you are calming the stomach, take also in charge this last symptom, and treat it thus: Dry the surface of the body by napkins, and then still further dry it, by rubbing the patient over with powdered chalk; and by previously heating the chalk, you will render it doubly useful. For this purpose chalk was recommended by a gentleman of Quebec. If chalk cannot be had, the best article as a substitute is flour; but be careful in heating it not to suffer it to grow brown, lest by the change of color its intransmissibility of caloric be diminished. By fomentations and moist heat, we are undoing with one hand what we are attempting with the other. Moist heat is in the very teeth of natural philosophy, and he who uses it, publishes his deficiency in the collateral branches of his profession.

3d. The third symptom is spasm. In attending to the two first as recommended, we do all that is requisite for the third. Opium, as an antispasmodic, and frictions.

All other remaining symptoms are unworthy of notice in this hasty sketch. They are mere concomitants, or sequels of the former, and require to be prescribed *pro re nata*.

P. S. I am induced to add the present postscript, seeing that some persons have not fully comprehended my meaning when I referred to *pro re nata* prescriptions.

I have purposely avoided speaking of the mustard emetic, a remedy in this disease so nauseously absurd. The idea of bleeding in cholera has its origin based on an hydraulic theory, totally inadmissible in this disease; and we have seen its warmest supporters abandon the child of their creation or adoption; it has been tried here a few times, and not found to answer.

Calomel, a remedy without which an English physician could not live, has, in its place, a good effect, but its place is more rarely found than the Briton imagines; in whose practice it forms as invariable, as constant, and often as annoying, an adjunct, as pins do in a lady's dress; in a lady's dress, pins *must* form the tie; in a gentleman's, buttons. The British will have pins, the Continental European, buttons; they are both good; on occasions, one is preferable to the other."

The treatment adopted by Dr. Arnoldi and son, and which has received the approbation of most of the physicians in Montreal, is as follows:—

Statement of the Doctors Arnoldi.

Having now so many data to go by, of the efficacy of our practice, in this most direful disease, (cholera) and knowing that the members of the medical pro-

fession are not agreed upon a decided or uniform mode of treatment, we take the liberty of announcing to the public, through the medium of your types, that our practice consists in ordering a *total* abstinence from all liquids, (and solids of course) from the moment the person feels himself under the influence of any symptom threatening cholera, by which sufficient time is gained to obtain medical advice. Our prescription is simply one pill, containing one grain of fresh opium and seven of calomel, which is to be swallowed dry, without the aid of any liquid, if possible. The use of all beverages, we then insist upon being most strictly abstained from, until every symptom has subsided, and something like hunger has returned. In few instances have we had occasion to repeat the pill, unless the patient's stomach did not retain the first (and which was uniformly occasioned by the fluids present in the stomach at the time,) and in the course of a few hours, we generally followed up by an ounce of Epsom salts, dissolved in half a pint of water, and a wine-glass full taken every hour. The subsequent treatment varied according to the peculiarities of the case, and could be regulated by the judgment of any practitioner, keeping strictly in mind the yet remaining irritability of the stomach as to fluids. Our exertions have been too frequently paralysed by the absurd practice of taking laudanum or opium pills previous to sending for advice. The peculiarity of our plan, and to which we ascribe our whole success, consists in obtaining the arrest of the urgent symptoms by the least possible dose of opium, *and absolutely doing nothing.* The plan is too simple to be generally credited, but hundreds have experienc-

ed the efficacy of it; and we would strongly recommend, at least, the first trial to every medical man.

The plan of sweating the patient we have had too frequent occasions to lament and discountenance, but we nevertheless do every thing in our power to restore heat to the extremities, by the application of bottles of boiling water, hot bricks, &c. &c. in the usual manner; frictions with hot *dry* flannels, (sometimes in desperate cases, sprinkled over with mustard.) In short, *dry heat* in any manner whatever, and this we find most speedily successful when the body itself is but slightly covered. The spasms are best relieved by keeping the patient in one posture, the slightest motion being apt to induce them. We candidly acknowledge that where the blue stage, copious sweats, and cold extremeties have set in, before medical aid is called for, we consider the case hopeless; but even under the most appalling circumstances, the perseverance in the above injunctions has occasionally been attended with favorable results.

Our injunctions therefore, are, that no medicine be kept in the possession of any individual for the purpose of being taken, either as a precautionary step, or before calling in medical aid.

That no person feeling indisposed, take medicine from any but a professional man.

That a correct detail of all the symptoms be given by any intelligent messenger to the doctor.

That no person should rely on the efficacy of any of those drugs that are vended as specifics; every one of our fatal cases has been preceded by the exhibition of these drugs, or the opium pills so generally supposed to be the first step towards the cure, the folly of which cannot be too strongly reprobated.

That when a person has once put himself under the care of a medical man, he should continue to follow his prescriptions *solely*. The interference of friends has been attended by the most fatal consequences, and that of professional men not less so, exclusively of the indelicacy and want of consideration that *should* subsist between the members of the profession; as it is but right that he who has the responsibility, should at least have the management.

D. ARNOLDI,
FRANCIS C. T. ARNOLDI, M. D."

It is, however, important, though humiliating, to add, that neither the above methods of treatment, nor any other, adopted at Montreal, appeared to be of any service in innumerable instances. I have been assured by intelligent eye witnesses who attended upon the practice of Dr. Arnoldi, that they saw it of no avail in very many cases.

One medical gentleman who saw much of this practice at Montreal, writes me that "it failed in all the cases he saw in the stage of collapse." It was however as beneficial as any other course pursued, and in the less violent cases, proved highly serviceable.

When it was known that the cholera actually prevailed in Canada, it excited universal alarm throughout the United States. Many of the large towns sent deputations of medical men to Montreal, to witness the disease, and to obtain all the information in their power, from personal observation, respecting this new pestilence. All the large cities entered very actively upon sanitory measures, such as cleansing the streets, and the filthy parts of the town. In some places,

cholera hospitals were provided, and fitted up for the reception of the sick. Quarantine regulations were adopted and enforced, to prevent the disease being brought from Canada and from Europe. But notwithstanding all these precautions, the disease actually appeared in New York, towards the last of June, 1832. It appeared in different parts of the city at the same time, and no one has yet attempted to show that it was imported, or to point out the origin of the disease at New York.

The disease, however, found the Board of Health at New York unprepared to meet it at first with that care and attention which is requisite in order to give a fair trial to the efficacy of remedies. A sufficient number of hospitals, with medical and other attendants, and apparatus necessary for the sick, had not been provided, and for a few days, no conclusions could be drawn respecting the influence of remedies upon the disease. In a short time, however, hospitals, &c. were provided, and more order prevailed, and greater efforts were directed to the vigorous prosecution of measures calculated to cure those attacked by the disease.

Almost every remedy which had been tried elsewhere, has been resorted to at New York, and yet it is a lamentable fact that they have all failed in severe cases.

The most successful treatment as yet adopted at N. York has been pursued to the greatest extent at Greenwich hospital. It consists chiefly in the use of external means, such as the application of cayenne pepper, mustard cataplasms, frictions, &c. &c.—giving but little, and in the stage of collapse *no* medicine by the mouth.

In this deplorable stage the patients were rubbed with the following ointment: —

℞. Ung. Hyd. fort. ℔. j.
Pulv. camphor ʒ viii.
—— cayenne ʒ iv. M.

This ointment when diligently rubbed upon the body and limbs, generally produced some reaction, and often produced slight salivation in six or eight hours. When it did so, the patients were considered safe.

The consecutive symptoms were successfully met, and treated like those of inflammatory fever, by local bleeding, blistering, &c.

A few have been cured in New York by the injection of saline solutions into the veins.

Dr. Rhinelander stated to the Board of Health of New York the case of Margaret Mehan, who was cured at the Crosby street hospital, by injecting into the veins, twenty four ounces of a solution composed of one drachm of carb. soda, and two drachms of muriate of soda (common salt) dissolved in six pints of water. The operation was performed at 7 P. M. July 21st.

Several other cases of cholera have been cured in a similar manner, both in this country, and also in England, where the practice I believe originated.

This practice is undoubtedly founded upon the fact, said to have been discovered by analysis; that the blood drawn from a patient affected with cholera, has lost a portion of its watery and albuminous parts, and also most of its natural saline ingredients.

According to Dr. Reid Clanny, of Sunderland, in

a communication which he made to the editor of the *London Lancet*, the blood drawn from a patient who had been five hours affected with cholera, had no taste nor any particular smell. It contained no gases of any description, and was as black as tar. For comparison Dr. C. gives the analysis of the blood of a healthy person.

This last contained one cubic inch of carbonic acid in the sixteen ounces.

	Healthy Blood.	*Cholera Patient.*
Water,	756	644
Albumen coagulated,	121	31
Coloring matter,	59	253
Free carbon,	32	66
Fibrine pressed and dried,	18	6
Muriates of soda and potassa, carbonate of soda and animal extraction,	14	0
	1000	1000

Dr. O'Shaugnessy, instituted experiments on the blood of cholera patients and obtained the following results.

"1. The blood drawn in the worst cases of cholera is unchanged in its anatomical or globular structure .2. It has lost a large portion of its water; 1000 parts of cholera serum having but the average of 850 parts of water. 3. It has lost also a great proportion of its natural saline ingredients. 4. Of the free alkali contained in healthy serum, not a particle is present in some cases, and barely a trace in others. 5. Urea exists in the cases where suppression of urine has been a marked symptom. 6. All the salts deficient in the blood, especially the alkali or carbonate

of soda, are present in large quantities in the peculiar white dejected matters."

These facts are exceedingly curious, and if confirmed by other cases and experiments, may lead to new views of the pathology of the disease, if not to new and more effectual methods of treating it.

The following communications from Dr. Lewins, to the Secretary of the Central Board of Health, England, will serve to show the effect of injecting saline solutions into the veins, and the method of performing the operation.

"Sir,—I conceive it to be my duty to let you know, for the information of the Central Board of Health, that the great desideratum of restoring the natural current in the veins and arteries, of improving the color of the blood, and recovering the functions of the lungs in cholera asphyxia, may be accomplished by injecting a weak saline solution into the veins of the patient. To Dr. Thomas Latta, of this place, is due the merit of first having recourse to this practice. He has tried it in six cases, three of which I have seen and assisted to treat. The most wonderful and satisfactory effect is the immediate consequence of the injection. To produce the effect referred to, a large quantity must be injected—from five to ten pounds in an adult—and repeated at longer or shorter intervals, as the state of the pulse, and other symptoms, may indicate. Whenever the pulse fails, more fluid ought to be thrown in, to produce an effect upon it, without regard to quantity. In one of the cases I have referred to, 120 ounces were injected at once, and repeated to the amount of 330 ounces, in twelve hours. In another, 376 ounces were thrown into the veins, between Sunday, at 11 o'clock, A. M., and this day

(Tuesday) at 4 P. M., that is, in the course of 53 hours, upwards of 31 pounds.

The solution that was used consisted of two drachms of muriate, and two scruples of carbonate of soda, to sixty ounces of water. It was at the temperature of 108 or 110 degrees.

The apparatus employed in injecting was merely one of Reid's common syringes, (the fluid being put into a vessel rather deep and narrow), with a small pipe fitted, that it might easily be introduced into an incision in the veins of the usual size that is made in bleeding. It may, however, be well to keep in mind, that, in the event of the operation being frequently repeated, it may be advisable to inject by different veins.

I forbear at present to enter further into the particulars; nor have we had sufficient experience to speak decisively on the subject. I may, however, mention that the idea of having recourse to this remedy in cholera, occurred to Dr. Latta, from being convinced (which I am also) that the evacuations upward and downwards, are, in reality, the serum of the blood; that it is the duty of the physician to replace it, as speedily as possible, by injecting a fluid, as similar to the serum as can be formed artificially, directly into the veins, which has been done here with wonderful, and, so far as we can yet judge, excellent effect. An immediate return of the pulse, an improvement in the respiration and in the voice, an evolution of heat, an improvement in the appearance of the patient, with a feeling of comfort, are the immediate effects. The quantity necessary to be injected, will probably be found to depend upon the quantity of serum lost—the object of the practice being to place the

patient in nearly his ordinary state, as to the quantity of blood circulating in the vessels.

I have, &c.

(Signed) ROBERT LEWINS, M. D.

To W. Maclean., Esq.

Secretary to the Central Board of Health.

Sir,—I did myself the honor to address a letter to you lately, on the effects of injecting a saline solution into the veins of a patient laboring under cholera. We have not frequent opportunities of trying this, which I denominate admirable remedy, as the disease is decidedly less frequent here; but I have seen it employed in two other cases, in the course of the last two days, with the same excellent effect. Sixty ounces are generally thrown in at once, and repeated at the end of three or four hours. In a case today, where I saw fifty-eight ounces injected, (being the third time of performing the operation), the patient's pulse, at the commencement was 180, very small, and very feeble. She was excessively restless, with a feeling of great weakness and tormenting thirst. Before twelve ounces were injected, the pulse began to improve; it became fuller and slower, and it continued to improve, until, after 58 ounces had been injected, it was down to 110. Before I left the patient, (a woman) her condition was altogether amazingly amended. There was a fine glow, and a slight perspiration on her face; the veins on the back of her head were well filled; the restlessness was removed, the feeling of excessive weakness gone, and the thirst ceased. The pulse was under 100, free, full and soft. Verily, Sir, this is an astonishing meth-

od of medication, and I predict will lead to wonderful changes and improvements in the practice of medicine. I have addressed you upon the subject, as the organ, from your high official station, of disseminating a knowledge of the extraordinary facts referred to. It will, of course, give me great pleasure to enter further into particulars upon any particular point on which you may require information, in reference to the cases which have come under my observation.

I have, &c.

(Signed) ROBERT LEWINS, M. D.

To W. Maclean, Esq.,

Secretary to the Central Board of Health.

In the hands of a man of ordinary dexterity, the common injecting apparatus alluded to in my last, will be found to answer the purpose perfectly well; but if the practice I recommend is, as I hope it will be, generally adopted, it will, I conceive, be expedient to advise that a regular and perfect transfusion apparatus be used; at all events, to warn those who inject to beware of allowing air to get into the vein. The tubes, of course, must be filled with fluid, as well as the pipe in the vein, before commencing, and considerably more fluid than it is intended to use ought to be in the vessel from which it is pumped.

R. L."

I understand that a work upon the efficacy of injecting the veins, is now publishing at New-York, and as this practice has been much resorted to in that place, its full value as a remedy in cholera, will soon be known.

I ought also to state, that the *exclusive camphor*

treatment has been employed at the Park Hospital, at New-York, and I am informed, with success. The practice consists of giving small doses of spirits of camphor very frequently, and withholding all other medicines. Dr. William Channing, of New-York, is a warm advocate for this practice. He believes camphor in small doses to be a specific for the cholera. He states that of 250 patients attacked by cholera, and many of them violently, and who have been treated exclusively by camphor, only five have died. He recommends from one to three drops of unmixed spirits of camphor to be given in a little water every hour or two, and every other medicine, especially *opium*, to be withheld.

TWO LECTURES

ON THE

CHOLERA MORBUS,

DELIVERED AT THE MILITARY HOSPITAL OF VAL-DE-GRACE, BY

J. F. V. BROUSSAIS, M. D.

Officer of the Royal Order of the Legion of Honor, Physician in Chief and First Professor of the Military Hospital of Instruction of Paris, &c.

Delivered during the prevalence of the disease in Paris, April 18, 1832.

Prof. Broussais had announced to his class that his lecture for this day, would be upon the epidemic which had caused of late, great ravages, and still greater terror in the capital of France. The amphitheatre was filled at an early hour, by a crowd of auditors more eager than usual to hear the Professor.

At 8 o'clock, Broussais appeared, and delivered the following lecture, to an attentive and silent audience.

"Gentlemen,—Before commencing, I desire to know if you wish me to deliver all I have to say upon the epidemic, in one lecture, or in two."

(All the class, in two—in two lectures.)

"Very well, gentlemen, I will give you two lectures. In the lecture of to-day, I will speak of the

disease, and in that of to-morrow, I will dwell upon the treatment."

GENTLEMEN,

The disease, the nature of which we are now to investigate, is called the CHOLERA MORBUS.* The name comes from another malady, so called, because those affected with it vomit a great deal of bile. The denomination was given to it in the times when the humoral doctrines were in vogue; at which period, diseases were attributed to *humors*, when their evacuation was most apparent, or seemed to explain the nature of the disease. Thus, in the sporadic cholera, there is always a large secretion of bile; and thence the name of cholera morbus; from the Greek word *cholos*, bile, and the Latin word *morbus*, disease; so that the etymological signification of the word is, disease of the bile. This name has been applied on account of the number of symptoms belonging to the epidemic which has long been known in the equatorial regions, and which now rages within our walls.

This epidemic has doubtless prevailed at several different epochs, and probably is the same as the frightful pestilence which made its appearance in the year 1348, and carried off nearly a third part of the existing population; and it has in effect a very great affinity to what is told us of the *black fever or black plague*. But whatever may have been its nature, it was forgotten in our region. We read, from time to time, numerous articles in the papers, upon the ravages which the cholera morbus had made at Calcutta and other cities of India or the Levant, but it was still

* These two lectures have been translated and published by John S. Bartlett, M. D., Albion Office, Cedar street, New York.

nothing more than a matter of curiosity. The English, who have considerable establishments in the East Indies, had never introduced the disease into their own country, and the small number of French who have visited those places, never spread its contagion at home. Whether this was owing to the circumstance that the communications between these countries have always been by sea, to the kind of food taken during the voyage, or to the fresh winds which blow over the water, and thus destroy the causes of the malady, whatever they may be, I cannot say; but certain it is, that the disease had never left the place of its origin.

The Russians first introduced the cholera into Europe, by means of their communications over land with Persia, India, and countries of the east, where the English have settlements, the disease having followed their armies. They brought it to Warsaw, and thence it has spread over various parts of the continent. It has appeared in different districts of Germany, in the provinces bordering upon Turkey, in Hungaria, and Austria; in short, it has been propagated to a great extent in the north and east of Europe, and has manifested the same violence as in the tropics. This circumstance constitutes an essential difference between the cholera and the yellow fever, which never appears, or at least, never prevails to much extent in cold climates. In fact, the yellow fever is supported by heat, and by emanations from low and marshy grounds; but the cholera needs no such aliment; it respects neither country nor season.

The cholera morbus, arriving in our latitude, manifested itself first in England, and hence it appears that an intervening sea cannot arrest its progress,

though the distance, it is true, from the continent to England is very trifling in comparison with that to India. I only allude to the circumstances as important considerations in our researches, and not as tending to establish, with any certainty, the manner by which the disease may be propagated.

The malady was preceded in many of the cities in the north and east of Germany by a sort of convulsive catarrh, which was called *grip ;* the year following this scourge appeared in all the places which had been previously visited with the *grip*, and persons who had made accurate observations and calculations of its progress, predicted from the appearance of the grip here last year, that the cholera would follow it the next. In this hospital we certainly discovered the forerunners of this event, (not the grip, for I acknowledge that during the last year we had very few cases of the convulsive catarrh, and I hardly believed in the existence of the grip, so rare were its instances,) but we observed some weeks before the appearance of the cholera, a great susceptibility in the digestive organs, so that we were obliged to reduce the aliment of many of our convalescent patients, and to renounce some means of internal revulsions which we were employing in cases of catarrh and and peripneumony. Some experiments which we made of the use of tartar emetic in cases of inflammation of the lungs, were attended with remarkable success in the winter; but we observed, all at once, that it had become impossible to introduce this medicine into the digestive canal of certain of our patients without producing the most disagreeable effects. Many threw up the tartar emetic and experienced violent convulsions of the stomach. In two cases,

which I particularly remember, the pulse was scarcely perceptible for the space of sixteen days; the patients were in the same situation as those who are now affected with the cholera, except that the pulse was not quite extinct; they were in a state of extreme stupor; the eyes red; the extremities cold, and the pulse at times imperceptible; their evacuations and vomitings frequent. This malady, treated upon the system of antiphlogistics, yielded to the medicine, but the patients were for a long time cold; but I confess that this observation was not of sufficient importance to decide me upon following the same system in cases of the cholera when it appeared with such violence in this hospital at first. Some time after a patient was brought, whose pulse had nearly ceased; he was bled profusely, and we then discovered that he had an inflammation of the lungs, which nothing would have led us to suspect when his pulse was nearly extinct. Here, then, are symptoms which seem to indicate an increased irritability of the organs of digestion. Under the influence of what causes, then, has this increased irritability taken place? A question by no means easy to determine. Let us proceed to the development of the actual epidemic. It broke out all at once among the poorest and most miserable classes of the people in Paris, and those first attacked were carried to the Hotel Dieu; three days after we had cases of it at the Val de Grace; it had also made its appearance at the Gros Caillou, nearly at the same time as at the Hotel Dieu. The precise epoch of its appearance, was, I believe, the 26th of March: we had no case of it at this hospital, however, till the 29th.

Let us now recall what has been said of the man-

ner in which it is propagated. The disease had scarcely any appearance of being contagious, since the persons who were first attacked, certainly had no communication with those who might have been in England; at least, this was the most probable supposition. However this may be, I will proceed to lay before you whatever facts I am in possession of regarding the manner of propagation. Doubtless the disease showed itself first in persons who had never been in contact with those affected by it. It is too strongly marked to have been brought in any vessel coming to France, for this would have immediately been discovered. Some person attacked with the cholera, arriving at Calais, or some other sea-port, would have communicated it to those about him. Nothing of the kind, however, is known to have happened. But although those first seized did not appear to have taken the infection from any one else, it is a well established fact, that when the malady had once declared itself in a house, it almost always happened that a number of persons were attacked in the same house, and I know of no instance where it has been confined to a single individual under one roof; I have no doubt there may be such instances, but I know many to the contrary; and in general, upon being called to visit a patient seized with the cholera, I have noticed that several cases ensued the following two or three days. This fact gives rise to the suspicion that there is a species of infection by which the patient communicates the disease to those who have charge of him. But, on the other hand, the inmates of the same house may be regarded as exposed to the same influences, and thus contracting the disease independently of all conta-

gion. This is possible; but still cases of the cholera are known to occur in different stories, and different families living in the same house, with various modes and habits of life; so that it would seem that in these houses there is some peculiar cause which multiplies its ravages.

We must, however, make a great allowance for the moral affections; those persons who are struck with terror at the sight of choleric patients, are doubtless very strongly predisposed to the disease. I will mention to you the example of a very distinguished person, an eminent foreigner, whose name, however, I am not at liberty to make public. This gentleman had traced upon the map the whole progress of the cholera; he conversed with his physician several times a week upon the route it had already taken, and was continually occupied in calculating the time when it would appear in such and such a place, and finally when it would reach France. The cholera having broken out here, "Behold," said he, "the disease is now at Paris; there is no doubt I shall feel its effects." He took pains to be informed every day of the number taken, and the number dead, but at first discovered no symptom of the disease in himself. He at length however experienced the diarrhœa which usually precedes the cholera, and though it was carefully treated from the first, nothing could arrest its progress. This is a case under my own eyes, for I was called to the patient by his attending physician. I could mention several similar cases. I found one yesterday of the same nature. A patient whom I had cured of an extremely obstinate inflammation of the stomach and bowels, was in great fear of the cholera. He went to pay a visit to one of his friends,

who was attacked, but did not venture into the chamber, as he found the whole family in tears and deeply afflicted; he had hardly entered the house when he was seized with the cholera; and I think he will die this day. Thus it appears that the disease is propagated by the most extraordinary means.

From some circumstances, it would appear that the disease is carried in the air; but this supposition is contradicted by the fact, that the cholera, thus regularly distributed over the same plain, attacks one village while it spares another; that it is not communicated by the inhabitants who are continually passing from one to the other; and that the same persons who had ventured with impunity into the midst of the sick, were attacked when the scourge at length arrived to their own place of residence. There is something so extraordinary in the manner in which the malady advances, that it merits the attention of physicians. After all the facts I have cited, I am in doubt if I ought to admit the idea of infection as it is generally understood. It is certainly impossible to allow that the disease is contagious, at least in the same way as the small pox or the itch; for this epidemic is not communicated by inoculation. Persons have inoculated themselves with the blood of choleric patients; others have even swallowed it; and others have impregnated their garments with it; some have had the courage to sleep in the same bed with the sick; and, in short, every experiment of the kind has been made, and the disease has in no instance been thus contracted. These experiments were doubtless made by men of courage; for, had timid persons been forcibly inoculated, I have no doubt that

they would have taken the disease. I am of opinion that courageous and devoted men could alone have made these experiments with impunity; a circumstance well worthy of notice. The author of a recent work on the subject, speaks of a choleric atmosphere which is confined to a city, a village, or to a single house even: but the existence of this atmosphere cannot be demonstrated. It is certain, however, that there exists a strong predisposition to cholera, and it is to this point that our researches must be directed at present.

[*Here the attention of the audience was redoubled.*]

It is proved by the reports of French physicians, who have visited other countries to study the nature of cholera, that every remarkable derangement of the gastric system may be followed by this malady when it prevails in the country. There are instances, however, of persons being seized with it, who were in good health, and with no other previous symptoms than those of the disease itself; but these cases are very rare. The malady is generally first announced by a slight relax, unattended by any disagreeable symptoms: when this ordinary relax already exists, that produced by the cholera discovers itself in a manner not to be mistaken. Thus, the first predisposing causes are *diarrhœa* and *indigestion*, and chronic irritations of the gastric system, which may have existed for a longer or shorter period: but, above all, a disposition to diarrhœa. Another predisposition to cholera is *terror*, one of the most powerful causes, undoubtedly. I have already mentioned one of the numerous instances I have met with of this.

Predisposing Causes.

Intoxication.—Men who were in good health, having been intoxicated, have been seized the day following with cholera, though they had experienced no previous indigestion; with the last exception, this case would be ranked among the first class of predisposing causes. Another predisposition is the *intercourse between the two sexes.* One of my colleagues, a professor in this institution, has mentioned to me numerous examples of students who were seized with the cholera after having visited a brothel. All those who have studied the disease at Warsaw, in Russia, and other places, have observed the same fact. *Convalescence* is another predisposing cause; persons convalescent from disorders pertaining to the gastric system, or on the point of becoming convalescent, are always exposed to the cholera; but we have not observed that this was one of the most powerful predispositions, or, at least, we have been able to elude it, by subjecting our patients to a severe regimen. I think, therefore, that such persons are not in danger unless they commit some excess which causes indigestion; a thing, indeed, which happens too often. To these predispositions, I will add that of patients who have for a long time been suffering from some severe malady. I am led to this conclusion, because numbers of my old patients who had been completely cured of intermittent fevers or of inflammation of the bowels, have been returned to me now. I have taken particular pains to ascertain with what diseases they had been afflicted before, and ascertained almost uniformly that they were affections of the gastric system. I have also remarked, that numerous persons who had been attached to the army of the

north, having passed some time in the hospitals, where they took sulphate of quinine, some of them in very large doses, easily became victims to the cholera; but I have not been able to ascertain whether these caes were attended with the previous diarrhœa, or with accidental indigestions. These are the principal predisposing causes. I will here add, that persons in apparently good health, and who had experienced none of these predisposing causes, having been attacked suddenly, I have endeavored to investigate the matter thoroughly, without contenting myself with the first details given me by the patients. I observed that they voided worms, and I discovered a great quantity in those who died. I believe we have had seven or eight cases of those attacked by cholera, when they believed themselves perfectly well; but I cannot consider a person, who is troubled with worms, as enjoying good health.

Manner of Attack.

I here divide the malady into primary and secondary. There are, as you know, three great sections of the digestive canal; the upper consisting of the stomach, which contains the duodenum: the middle containing the small intestines; and the lower section, in which are found the colon, cœcum, and the rectum. You know that all inflammations of the intestines predominate sometimes in one, sometimes in another of these sections. The cholera, then, is not exempted from these laws; we have observed the commencement of the malady in one or the other of these three sections of the digestive canal. I shall speak first of the attack in the lower section, these being the most frequent. The patients experience slight attacks of colic, or sometimes nothing

more than a slight pain in the abdomen, which precedes an evacuation; many are seized all at once with an inclination to go to the privy, and there discharges are made promptly and without pain. The canal empties itself at once; and some persons, habitually constipated, are much pleased to find their passage open. As soon as the intestine becomes empty, the characteristic results of the cholera take place. The matter voided has a milky appearance, and somewhat resembles a decoction of rice or oatmeal; it is often tinged with bile, and I have constantly noticed that it contains particles of mucus. After this, all the symptoms and characteristics peculiar to the malady which I have just described, make their appearance. The patients are seized with cramp; the extremities become cold; nausea succeeds, and is rapidly followed by vomiting, as we recently observed in the case of a patient, who, though he experienced only a slight nausea at the commencement of our visit, vomited abundantly before we left him. I proceed now to the attacks of the disease in the middle section, and the small intestines. The patients experience flatulence, violent workings and heat in the intestines for several days; they have also slight colic, and a sort of uneasiness which they find it difficult to describe. They, however, preserve their appetite. Sooner or later the diarrhœa ensues, and the symptoms already noticed as occurring in the lower section, manifest themselves here. The attack of the malady commences less frequently in the upper section; in this case the patients are constipated; they experience some nausea and irritation of the stomach; they are forced to vomit, which they do at first without pain, unless there have been previous predispositions;

after this, the vomiting becomes painful; cramp takes place in the upper extremities; the throat becomes dry, hot, and sore; the muscles of the jaw are also affected with cramp; and after this, the other symptoms of cholera appear.

There is still another way in which the disease attacks the patient: this is by the nervous system. In this case there is no derangement of the digestive canal; the persons thus seized, experience a dizziness and fall senseless. Many soldiers have been attacked in this way; and there have been cases of it also among the citizens. Persons thus taken with the cholera, fall as if struck by lightning, and in numerous instances have died immediately. A question here arises,—Does the disease, in these cases, really commence in the nervous system. Was there not previously a general irritation in the digestive canal, which produced a reaction on the nervous system? I am inclined to this last opinion. It is certain, at any rate, that numbers who are seized at first with dizziness, sudden loss of strength, relaxation of the muscles, and fall, recovering from these attacks, are taken with vomiting, the first sign of the malady, and then experience severe colic. These are the facts I have been able to gather respecting the manner in which the disease first declares itself.

When the malady is secondary, it appears towards the close of a violent inflammation, or even in a convalescent person. In a patient suffering from some acute disease, the cholera commences ordinarily by diarrhœa, and after that the other symptoms appear. The pulse is feeble, and the remains of fever, which would probably have disappeared in two or three days, are at once extinct; the patient becomes cold,

and the symptoms of cholera declare themselves in a manner too evident to be mistaken. Convalescent persons are usually attacked in the lower section, and, by looseness of the bowels, and having no fever, slowness of the pulse and coldness of the extremities take place the sooner. Inflammatory diseases of the lungs seem to be a preservative; and it has been remarked, that persons troubled with asthma escape the cholera; this must not, however, be entirely trusted in, as there are phthisical patients who have a sort of diarrhœa, and if they had this predisposition in the time of cholera, they would doubtless be attacked. Thus it appears, that persons suffering from diseases of the stomach or bowels, are most strongly predisposed to the cholera.

Symptoms.

The better to explain the symptoms and characteristics of this malady, I shall make the following divisions of them; 1st, Those which come to our knowledge by the information of the patients themselves; 2d, Those inferred from the exterior aspect of the patients; 3d, Those resulting from the nature of the evacuations. First series—Those patients who are able to describe their condition, give us an accurate detail of what passes within them. They experience an inversion or upturning of the lower part of the abdomen, with violent heat and burning concentrated near the *epigastrium.* Those who are physicians, say that they feel all their blood rushing to the interior of the abdomen; such are their expressions; others imagine that they feel electric sparks, which occasion much pain, and which are followed by uncommon heat; then comes an extreme heaviness, with a weakness of the

muscles, so that the patients cannot move. With the exception of complete apoplexy, there is no disease which renders the body so heavy and so lifeless, as the cholera; the patients have no power of motion; they seem to be a mass of lead or stone; they can only stir the feet and hands, but cannot raise the trunk. This is easily conceived, for the principal point of irritation is in the digestive canal, and must react on the spinal marrow and muscles of the body. Their discharges are not very painful, for they are not accompanied by *tenesmus*, or desire of going to stool, as in cases of ordinary dysentery, but are made with ease, and almost without the volition of the patient. The colics exist, nevertheless, but do not seem to occasion the discharges which sometimes take place even when the colic is not felt. The discharges and colic are generally accompanied by cramp. These cramps are always very painful, and it is these which especially exhaust the patients, and are by them the most dreaded. The pain is manifested by the shrieks of the sufferer. The cramps do not affect the members alone; they also manifest themselves in the muscles of the back, which are placed along the vertebral column. The patient always feels a considerable irritation in the region of the stomach and the *epigastrium*, which is, perhaps, felt more than the colics; it oppresses the patient, and prevents respiration; and he seeks to be relieved from it by placing a cushion under him, so as to make the breast prominent. A strong contraction appears in the face. Vomiting gives relief, and many of the patients desire and provoke it. The vomitings go on, continually increasing, with compression of the epigastrium, and difficulty of breathing; and, with these symptoms, come cramps in the limbs and

jaws, and sometimes in the muscles of the eyes. The knowledge of most of these symptoms is due to the declarations of the patients themselves.

Let us proceed now to the symptoms entirely exterior. You observe, in the first place, signs which the patients do not speak of. The muscles are strongly marked under the skin ; the eyes are hollow, dry, and sunken ; after some hours, the consistence of the eyeball seems to be dissolved ; and one would say the eyes were turned inward by means of a thread. The aspect of the patient is hideous ; the face very soon loses its fulness, and is contracted in a manner peculiar to these affections : but what causes the greatest astonishment, is the livid hue which spreads itself over the countenance as the disease advances. The extremities are cold ; the tongue is usually pale, chill, broad, and flat ; the breath cold, and the pulse feeble ; the words are rather breathed than pronounced. The patient remains motionless, on the back ; if you force them to lay upon the side, they cannot continue so long, but beg to be laid on their back, so that the breast may be raised. While the body thus remains still, they move the feet and hands, uncover the breast, complain of a fire within, and tear off the poultices and other warm applications placed on the stomach ; they turn from one side to the other, but are not able to rise up. The color becomes darker and darker, and is soon livid. It varies, however, according to the natural complexion of the patient. Dark complexions become black or bluish ; but those which are more transparent turn yellow, taking the color of bad gilding. This is followed by cessation of the pulse, which I shall call asphyxy. The pulse grows weak rapidly, and sometimes disappears in three

hours, or even less. As soon as the pulse begins to grow feeble, the patient falls into the heaviness I have referred to: there are cases, however, in which he still preserves his strength when the pulse is extinct, and is even able to raise himself up, and go from one place to another; but this strength is soon lost, and the unhappy person falls powerless. After the cessation of the pulse, the black hue manifests itself with various rapidity, sometimes at the end of two or three hours, sometimes even in less; this depends upon the promptitude with which circulation ceases. When a patient thus affected is examined with a stethoscope, a slight tremor is perceived, similar to that in a dying person, or a pregnant woman. These are the characteristics by which this affection is discovered. When the patient throws up nothing but the aliment he has taken, this vomiting cannot be said to be caused by cholera; neither is the voiding of local matter any sign of it; but when these symptoms are followed by that kind of matter I mentioned before, there can be no doubt of the existence of cholera, whatever pains the patients may experience beside. I insist upon this point. A more fœtid smell arises from this matter towards the last, than at the commencement of the malady. The matter changes its character during the progress of the disease: it grows thick when the sickness is long continued; but is, at first, extremely thin. A noise is heard in the intestines, and the matter, tinged with bile, is rapidly voided. In some cases, this appearance of bile continues to the last. It is important to pay attention to this circumstance, in order not to be deceived. The cholera may be always recognized by the appearance of whitish gelatinous particles in the evacuations. Attention

must be paid rather to the affections than the pains, for nothing is more variable generally and in particular cases, than the sensibility of our interior organs. There are persons who suffer much from the slightest inflammation; others undergo severe diseases without suffering. Among those attacked with cholera, some pass through all the different stages without pain; others are agitated, and suffer in the limbs, or have very distressing cramps. The pain of the cramps varies according to the sensibility of the individual; some are attacked without moving a muscle; others utter horrible shrieks. Hence the importance of attending to the fundamental characteristics of the disease, and these cannot be inferred from the sensibility of the patient. Slowness of circulation, extinction of the pulse, coldness of the extremities, livid color of the face, are the characteristics which it is impossible to mistake, and are the symptoms upon which we must fix our attention. When called to a patient, if you find his evacuations white, and a diminished circulation, be sure the cholera has commenced. This is the object of my first lecture. To-morrow I shall occupy myself with the *progress* and *treatment* of the malady.

BROUSSAIS' SECOND LECTURE ON THE CHOLERA MORBUS.

This second lecture, in which the learned Professor proposed to develope his doctrines in full, drew together a larger crowd than attended the preceding.

(19*th April.*)

Gentlemen,

In the lecture of yesterday, I imparted to you some ideas, which I had collected, upon the cholera morbus. I shall recall, in a few words, the most important parts of that lecture.

We have seen that the cholera is probably a very ancient malady, since the name of sporadic cholera has been given to it, although it differs greatly from that disease in its character of an epidemic; for the sporadic cholera is scarcely ever developed, except in the summer, under the influence of irritating causes very easily averted, and is neither propagated by infection, nor contagion. On the other hand the cholera morbus is certainly propagated by a kind of infection which it is difficult to characterise. Still it is proved to exist, as I showed you in my first lecture, and we are forced to admit it. I mentioned next the predispositions to cholera, which reduce themselves to an uncommon irritability, or a morbid irritation of the digestive canal. I also pointed out to you the determining causes, which are, all kinds of violent stimuli that cause any considerable derangement in the act of digestion. I then directed your attention to the manner in which the disease commences its attacks. You undoubtedly remarked that there was,

almost always, as the patients themselves avowed, some disorder of the digestive canal; but that the malady sometimes commences in the nervous system by loss of the power of motion, or of the intellectual faculties. I added, however, that I was by no means convinced that those patients, in whom the disease made its appearance under the latter form, had not already experienced some derangement of the digestive canal: I was therefore obliged to leave this point undecided. I next showed how the attacks commenced in the three principal sections of the digestive canal. There are, then, four different ways in which the disease commences; by the three principal sections of the digestive canal, or by the nervous system; which last, I am of opinion, may be the effect of some previous but undiscovered affection of the digestive canal. After this, we examined the characteristic symptoms of the malady. That you might the better remember them, and to avoid all mistake, I classed them in the following order: 1st. The symptoms, which came to our knowledge by the declaration of the patient of what he has perceived in himself; for this malady always commences by some derangement, and these are the affections of which the patient is able to give an account. 2d. The symptoms discovered upon examining the body of the patient. 3d. The nature of the evacuations. I fixed your attention with care upon this point, because it is of great importance in recognising the disease.

We will now proceed to the question, if in case the cholera be arrested in its earliest stages by a proper and well directed medical treatment, this can be considered according to the rules of good logic to

constitute a particular disease in every case; I am of opinion it cannot be, and these are my reasons. For example, if a man is running to throw himself into a river, and is met by a friend who removes the cause of his sorrow, would you say that this man has been pulled out of the river? Certainly not. Still it is not the less true that he would have been drowned, but for the intervention of his friend. This is precisely the case of those in whom the progress of the cholera has been arrested; they were hurrying on to death, and you have stopped them. Still their progress had already commenced. We must consider, then, 1st. The progress of these affections; 2d. The examination after death; 3d. The prognostics; 4th. The treatment. These will form the subject of the present lecture.

Progress of the Malady.

It is difficult to discover any absolute, independent, and unvarying progress in the cholera. It is worthy of remark, in the first place, that the spontaneous cholera is always the most dangerous. M. Gravier, physician of the King, at Pondicherry, having observed the disease at Calcutta, was the first person educated at the physiological school, who applied the principles of this school to the investigation of the cholera. M. Gravier lamented the bad result of a treatment by stimuli, composed of pepper, brandy, cinnamon, musk, and ginger, applied in such cases; and he proved that a greater number of cures could be effected by keeping the patients upon rice-water, after having bled them. He could obtain neither leeches, nor ice, nor any of the means which you have seen employed here;

and besides this, the malady discovered itself in thousands of individuals, so that he was only able to employ two or three general means against this devastating scourge. The same embarrassment recurs in every instance of a great epidemic. It is evident, then, that by this anti-phlogistic treatment, of which the basis was copious bleeding, and by adopting rice-water for the beverage instead of brandy and other stimulating drinks, M. Gravier cured more than half his patients, while scarcely one per cent was saved by the method adopted before. Still M. Gravier has confessed, with an extremely laudable candor, that bad treatment was better than to abandon the disease to itself; for there was no case on record of the cholera, thus abandoned, terminating otherwise than fatally. This fact was noticed in a communication by M. Gravier on the subject, which was showed me in manuscript, for my opinion, in 1823, or 1824. I forget the precise epoch, but the article will be found in the archives of the Faculty of Medicine. M. Gravier has, since then, sent me a great number of notices upon the cholera, from which an article was formed, which appeared in the 'Annals of Physiological Medicine,' for the year 1827. The observation of M. Gravier, is conformable to our experience; this terrible malady, when abandoned to itself, is uniformly mortal, while it is curable in different degrees, according to the treatment, and the conditions by which it may be modified. There are three different ways, then, in which the disease may be treated. 1st. By pure stimulus. 2d. By a stimulating and debilitating treatment, employed simultaneously or alternately. 3d. The physiological treatment.

The disease, abandoned to itself, is always fatal,

and appears with the following symptoms:—When the affection has discovered its peculiar characteristics, the patients have continual vomitings and evacuations; the pulse grows feeble by degrees, and finally disappears; as soon as the pulse has become extinct, the blue color appears, proceeding from the extremities to the centre; the evacuations cease, and the irritability disappears throughout; the intellectual faculties, which had been preserved in a wonderful manner, for a long time, & in spite of the sinking of the patient, are now lost. Of these unhappy persons, some die in a sort of agony of short duration, which is announced by a strange respiration, which I should rather term a laborious heaving of the stomach; others expire suddenly in endeavoring to move themselves, or in the moment of being placed upon a seat, or raised up to change the position. Such is the termination of the malady. As to its duration, the term varies a little, but not much, for the disease is circumscribed within very narrow limits; it is scarcely ever known to last longer than three days when left to itself; and often terminates fatally in two or three hours; that is to say, the phenomena of vomiting, evacuations, feebleness of the pulse, coldness of the extremities, blackness, and agony, advance sometimes with great rapidity, sometimes with a degree of slowness, which is generally confined to the space of three days. The disease is modified in the first place by pure stimuli. I mention this method first, because it has been adopted in India, at Calcutta, and in the English settlements generally, for the simple reason, that Brown's system had absorbed the whole English practice, and the physicians who came from England, were necessarily obliged to apply their theory to the patients, in every possible climate; still, this method

was more injurious in the tropics, than elsewhere. This method, purely stimulative, consists in administering spirituous liquors, such as brandy, rum, gin, not only pure, but impregnated and saturated with aromatics and irritating substances, such as cinnamon, nutmegs, cloves, &c. Madeira wine is every where employed, having been brought by land, and being extremely powerful, as the chemists know, since its fermentation is not finished; and there remains a considerable quantity of sugar; besides this, it is found in every part of the world. Some narcotics are also used; but the Madeira wine and brandy are always impregnated with aromatic substances, such as musk, pepper, ginger, and cloves. The mortality under the influence of this treatment, is frightful. There are, however, a few instances of a happy termination of the malady; such are the resources of human nature, that the patient sometimes owes his safety to the very circumstance which seemed about to put an end to his life, and this by means of revulsions.

It must be confessed, that our information respecting the phenomenon of revulsions, is much too limited; because these revulsions depend upon the sympathies or co-operation which exist between the organs; and this study has been abandoned entirely in favor of experiment. In this, there is nothing astonishing; it is natural to the human mind. Whenever any new method comes greatly in vogue, it is easily seized upon by men of science and of high reputation, and they must be satiated with it before they can perceive the inconveniences which result from it. Hence, great numbers became victims to the system of Brown, before its dangers were discovered.

It is then proved that those who are treated by ex-

cessive stimuli may experience a favorable crisis of their disease, and this crisis is brought about by sweating, and it is particularly that kind of sweating which is induced by wine, punch, spirituous liquors, and brandy, which saves the life of the patient.

These are the advantages of this treatment. I shall now mention its inconveniences. The first is, that this method, compared with another which I shall speak of, is infinitely more dangerous, since it is attended with a much greater number of deaths. Another is, that those who are cured by the stimulating method, still preserve a morbid state of the digestive canal, and even of the whole system, which continues through the rest of their life.

The eclectic or mixed method of treatment, is advised by erudite, but timid persons, and is adopted by the mass of physicians, because their ideas upon the nature of the disease are not well determined. It consists in first bleeding the patients, and after that, in provoking either upwards by ipecacuanha or tartar emetic, or downwards by calomel, or other purgatives; and in endeavoring to produce perspiration by means of sudorifics, baths externally applied, or heat applied internally. Narcotics are then administered for the pain or movement of the nerves; but they are given before the inflammatory state has been sufficiently reduced. This method is attended with more favorable results than the former; and it has prevailed in Paris among those physicians who were not educated at the physiological school, and who have not been accustomed, as we have in this school, to compare continually the effect of the modifications in the different maladies with the progress of the symptoms, and the results obtained from examina-

tion after death. I shall not enter into any farther details of this method; it is much employed, and it is sufficient to refer to it. I ought to remark, however, that its results are more favorable than those of the first method. I hardly know, indeed, if a comparison can be drawn between the two; for the results of the first have been attended with hardly any success; none, indeed, unless in comparison with the ravages of the cholera when left to itself, which is known to be almost uniformly fatal. It is better, in effect, to expose the patient to extreme stimulus, than to leave him to perish; but it is better still to weaken him by bleeding before resorting to stimulus.

[Patients die by this treatment a little more slowly than by the preceding method. (Lively sensation.)]

The physiological method, which consists in the use of emollients and relaxants, and of stimulus applied externally, in proportion to the susceptibility of the patient, appears to us preferable to the others; and I shall proceed to describe its rules of application. I wish you to take particular notice here, that I am not speaking of the treatment of the disease, but only of its progress. I simply wish to explain to you, that there is a great variety in the progress of the malady; that it is subjected to modifying circumstances; that when abandoned to itself, it has not the same result as when treated medically; and that its result differs according to the manner in which it is treated. I wish to fix your attention upon these points without going into any further details; for you have all the same opportunity for examining the disease as myself.

Examination of the body after death.

When these attacks prove fatal to the patient, it

is very natural to open the body in order to discover the first, or, at least, the secondary cause of the disease, which has extinguished life. I make a distinction here between the examination of those who were not subjected to any treatment, and those who were treated in a manner to delay death a little without finally preventing it. When we examined the bodies of persons who died after having exhibited symptoms of the cholera morbus, it was necessary to take account of their former maladies and the traces they had left upon the organs. We have here, as in all the hospitals, many instances of the patients who are brought in alive, but who die before they can be subjected to any treatment. These patients are black when first presented to us—generally completely black. The muscles are very prominent in the body after death, and in a state of contraction, like those of a wrestler who is making an effort to rise from the ground; and they have been thus described with great accuracy in a work just published. On opening the body, we find in the brain a considerable injection in the menynges or membrane. The injection of the cerebral substance is not generally in proportion to that of the menynges; that is to say, the membranes which envelope the brain. This is nearly all that is worthy of remark in the brain; there is almost always a little wateriness in the cavity of this membrane; but, in general, this is not abundant, but, on the contrary, a very considerable quantity is found in those patients who have been treated for a certain time, and who have been bled. We remark very disagreeable symptoms in the throat also, when these congestions of the blood in the head are formed; there is a stiffness, dryness, and sometimes a

choaking up of the ganglions ; otherwise there is no increased softness, nor dissolution of the mucous membrane of the mouth, or of the œsophagus. The stomach is ordinarily very much disordered, sometimes black, sometimes brown, and sometimes reddish. Its vessels, extremely developed, exhibit ramifications of a black color; and between these vessels the mucous membrane is softened, and almost dissolved. Meanwhile, it is always necessary to take notice of the previous diseases. We have noticed that habitual drinkers, or those who have exposed the stomach to any habitual excess, exhibit frequently a softness and even a very considerable destruction of the mucous membrane ; and this alteration does not exist in persons of sober habits. The duodenum is rarely disordered to any great degree, unless the patient had been previously affected with complaints of the stomach and bowels. The small intestines are very much filled up; but here occurs a very remarkable circumstance ; for we must make our distinctions, and speak of the symptoms in reference to the appearance of the body after death. Those patients who had very abundant evacuations, (and these take place to a frightful degree both by vomiting, and going to stool, in those who have no medical treatment, so that their strength is exhausted and life passes away,) those patients exhibit the redness of the mucous membrane of the intestines less apparently; it exists, however, from the commencement to the end of the canal, but not very distinct. An immense quantity of the liquid which is evacuated, is found in the interior of the digestive canal. There is an entire analogy between the matter vomited and voided downwards, after the fecal matter and bile have

passed away, and this liquid which is found in the cavities of the digestive canal. We have had an opportunity of examining patients in whom these secretions produced by cholera had not been repressed by the efforts of art, in consequence of the physicians not having discovered, during the first moments of the disease, the malignity of certain evacuations, which might be mistaken from slight accidents or from derangement of the gastric system; these patients arrived here in the last extremities before they could receive any treatment. We were much surprised at these examinations, to discover a sort of mucous formation, and a large quantity of fluid resembling a fuliginous solution which filled the intestines. The mucous membrane appeared a little paler than usual, a slight redness merely pervading its whole extent. From the upper orifice of the stomach, down to the anus, no part discovered this redness; and we have only been able to ascertain that when the patient had experienced a previous irritation of the digestive canal, the stomach and bowels had the appearance of greater redness and alteration. The bladder was contracted and gathered into the pubis, a circumstance not at all surprising, since the abundance of the intestinal evacuations must, of necessity; have exhausted the sources of urine: but there was no appearance of inflammation.

Those subjects in whom the malady had been treated in such a manner as to prolong it without final success, exhibited appearances a little different. These affections commonly cease, or, at least, are modified, when the patients are subjected to medical treatment. When they are well treated, the cessation is followed by their cure, but when treated less

advantageously, they are sometimes cured, sometimes not. When they are not cured, it is found that the inflammation is more strongly marked. The redness which was a slightly pale, and resembled in some degree the color of the flower called hortensia, is here very bright; it is scarlet, or even bordering upon black; there are portions, even in the digestive canal, which appears gangrenous. Thus, when the disease made its first attacks in the gastric region, a frightful derangement is found in the stomach, the mucous membrane of this organ appearing entirely destroyed and very black. When the disease commenced in the small intestines, the mucous membrane is sometimes gangrenous; in other patients it is completely destroyed. The liquid contained in the digestive canal, is less fluid, less white, less opaque, adheres to the mucous membrane, and approaches the condition of a false membrane. The intestines are less humid, less black, and more difficult to separate from each other. The glands of Peyer and Brown, somewhat more swollen, present the appearances of ileo colic.

In a word, the ordinary symptoms of disease of the stomach and bowels appear. The brain is crowded not with blood, because the patients have often lost much by bleeding. It is more humid, and fewer drops of blood are discovered when its substance is cut; the ventricles are more moist, and sometimes abundantly supplied with watery matter. We have never found it inflamed, nor have we ever remarked any arachnitis, properly so called. We have seen congestions of blood and watery effusions, but never distinct inflammation. As to the heart, we found it in the first subjects, choaked up with thick blood,

its partitions thickened, and upon being cut, blood, less coagulated than we expected, followed the knife in drops, and even in a stream; but there was no marked inflammation in the internal membranes of the heart and of the large vessels. When the patients lived for some time after the secretions of the digestive canal had ceased to be so abundant, the bladder was not so much contracted as in the case of those who had died during the evacuations. It was entirely filled with urine, without inflammation, a circumstance which throws much light upon the cause of the cessation of urine, which must be attributed to the deviation of the watery fluids which go to the intestinal surface instead of following their course as in the healthy condition. The muscles are sticky, dry, and emaciated. The lungs present no remarkable appearance.

I repeat here, we must give attention to the previous diseases. What are we to conclude from all this? That the cholera morbus is essentially an inflammatory affection. This is my conclusion. This inflammatory affection attacks the whole extent of the digestive canal, from the throat to the anus. Whenever it is intense, when it is very red, as it commonly is when the malady has lasted a long time and the evacuations have ceased, when it is less bright in color, as is the case when death takes place in the midst of abundant evacuations, it is always general, and there is no part of the canal which is exempt from it. I insist upon this proposition, which is in opposition to many reports upon the cholera. I insist upon it, because it is true, and serves to verify many important points. Some persons maintain that there is no inflammation in the digestive canal, and

they rest their position on the fact, that some patients have died during abundant evacuations, in which case the external membrane of the digestive canal is not scarlet; but the inflammation does not the less exist, and the abundance of the secretions and evacuations explain sufficiently its want of redness. Do not conclude from this, however, that I only consider the disease in relation to inflammation. I set aside here that unknown cause referred to in my first lecture, and which I compare with that of the small pox, which is equally unknown; what we see in the small pox, as in the cholera, is the inflammation which these maladies produce.

Thus, in a word, the cholera morbus, as we believe, is a general inflammation of the internal membrane of the digestive canal, of which the first determining cause is unknown, while the predominating and subsequent causes may be comprehended. And there is an advantage in this; for if the first causes cannot be discovered, we can, at least, distinguish the secondary causes, a circumstance of great importance, and which ensures us much success.

Prognostics.

These are, 1st, The previous health of the patient. Persons in good health are easily cured, when the disease is treated in time. The age of the patient,—Young persons are cured more easily than the aged. The sex—Upon this point, it has been impossible to make any positive or satisfactory comparisons. The moral condition—I have already made some remarks on this point, and all our observations tend to confirm them. The prognostics depend, 2dly, upon the nature of the commencement of the disease. If it be-

gin in a downward direction, by a gentle diarrhœa, there is time to treat it, and arrest its progress. And at this moment a vast number of these affections are stopped at their commencement, by the skill of the physicians in Paris. The disease, when thus arrested, is called *cholerine*. Thus, some trifling consolation is offered to the public. The physician says to the patient, 'you have the cholerine; you have a slight diarrhœa, but you have not the cholera.' And when it is checked, he does not say, 'you have had the cholera.' Thus he avoids terrifying the patients, who are satisfied without being made to understand that they were victims devoted to the cholera, had not the necessary succour been lavished upon them. When the disease attacks the middle parts, the result is the same. If it be confined to a slight relax and tension, it is easily checked. When the symptoms predominate in the upper parts, and the diarrhœa has ceased, I venture the opinion, that the disease is more easily cured. When, on the contrary, it has lasted a long time, and the cramps, which are a proof that the inflammation of the intestines has extended to the spinal marrow, have commenced, when the patients are seized with great anxiety, agitation, and uneasiness through the whole extent of the abdomen, they are in much greater danger. When these symptoms have disappeared, and there remains nothing more than vomiting and distress of mind, there is much more hope of recovery,

All the symptoms have not the same importance. The congestions of the brain scarcely ever manifest themselves during the violence of the disease. The patients may appear to be in such a state of sinking and exhaustion as to cause the belief that there is a

congestion of the brain; but if you excite them, if you speak to them, they answer very well; so that, if you have let fall any indiscreet expressions, you may have cause to repent it, when you see that the patients have the full use of their faculties. On the contrary, when the symptoms of the attack have ceased, and the moment when you flatter youself that the cure is about to commence, a very severe congestion of the brain may take place, unless measures are adopted to arrest its progress.

When the malady is prolonged, when the patient is revived from the state of asphyxia, and the dark color has disappeared, the tongue red, and the skin hot, the disease has changed its nature; the patients exhibit all the symptoms of the diseases of the stomach and bowels, which we are called to treat every day. We here make this distinction: it is always necessary in the treatment we adopt, to have reference to the modifications of the disease. When the patient has been revived from a state of stupor, asphyxia, and blackness, by means of stimulus, this disease of the stomach which ensues, is severe, and resolves itself into typhus.

At this very moment, indeed, it is said that the typhus reigns in Paris, with the cholera, and the same thing is repeated upon the subject that was said in Germany, Poland, Russia, and the Levant. But if you wish to appreciate justly this pretended typhus, this typhoid fever which succeeds the cholera, and of which the most dangerous symptoms have been suppressed, you will perceive that this same fever should be subjected to the same treatment as the ordinary complaints of the stomach and bowels. In our hospitals, for instance, there is no typhus; there

is nothing else than slight complaints of the stomach and bowels, which pass off in three or four days, and the patients call for food. In those halls, on the contrary, where the patients have been revived by means of stimulants, such as punch and brandy, they perish in great numbers, after having been carried into another hall as cured of the cholera. They are reported in the bulletin as cured of cholera, and placed in a separate room as affected with typhoid fever, and nothing farther is said about them; the attention of the physicians is given to the new subjects of cholera who arrive, and the first are forgotten.

I now pass to the treatment, which, for the sake of perspicuity, I divide in the following manner:—

The Ancient Treatment, or treatment of the sporadic cholera.—*Treatment after the manner of Brown.*—*Mitigated treatment*, or eclectic, or *vacillating* (*bascule*) (laughter); I make use of a word which expresses my meaning, without intending to make any application.—Finally, *Physiological treatment*, such as we employ here. These are the four divisions we have made.

Let us examine first the *ancient treatment.* In all the standard treatises, the following receipts are found. We are directed to administer abundantly to the patient a decoction which favors vomiting, that the bile may pass off, and after that when every thing that was wrong in the digestive canal is evacuated, the cramps and irritation must be allayed by narcotics. This treatment has saved some individuals, but has not been so successful as to be generally adopted; besides this, the practice of the middle ages has fallen into disrepute, and *Brownism* has taken its place, particularly in those countries where the cholera prevails,

for the English physicians have carried there the ideas of Brown.

Brownian treatment.—This consists in the use of stimulus. I have little to say on this head, having already referred to it before. I shall only add, that it cures very few patients. I will not say it kills them, because, when the cholera is left to itself no one escapes; and this treatment, in a vast number of cases, is succeeded by typhus, or disease of the stomach and bowels, which extends to a degree of typhus. I do not wish to accuse any one, but only to do justice to all. As to the means of treatment, I have pointed them out.

The *mitigated treatment* consists of the following means. The physician seeks to restore heat to the patient, at the period of asphyxia, or if you wish to go back to the diarrhœa which precedes, he seeks to remove it by means of rice-water, diascordium and opium. Sometimes, indeed, the force is moderated, but it is impossible to prevent the malady from breaking out. After the asphyxia and the blackness have made their appearance, the physician endeavors to warm the patient by external and internal applications. For exterior, hot baths are used, and dry friction, with aromatic and stimulating substances, hot bricks and flannel. The skin is irritated and stimulated continually, in the hope of recalling circulation. For the same purpose, hot drinks are internally administered. Some practitioners have no fear of the drinks being too strong. Like the followers of Brown, they give brandy and punch. Others, more timid, make use only of borage, or balm, and above all, of camomile, which has lately obtained a great credit. After that, they give something fortifying, acetate

of ammonia, ether, or substances containing alcohol. If the patient experience nausea, opium is sometimes added. When a reaction is produced by these means, which does not always happen, the patient grows warm; some hours afterwards, he becomes cold again; the same methods are again employed, but he grows cold continually.

But persons who manage well, hasten to profit by the first appearance of warmth, and send the patient into another hall. Thus I saw, at a boarding school, a number of scholars who had been attacked, warmed again for the moment, and sent home to their parents, where the disease immediately returned. It is possible, however, to maintain this warmth; and when a continued reaction has been obtained, an intense irritation occurs; less violent, however, than that produced by the hyper-stimulants of the Brownians. Others think that evacuations should be promoted by emetics. As soon as they see the quantity of liquid which inundates the digestive canal, they say, 'evacuations must be aided,' without reflecting that they will arrive at the absolute exhaustion of the strength, and that the irritation will be augmented. English and Polish physicians have been known to give, alternately, calomel to promote evacuation, and brandy to stimulate. Some cures have resulted from the treatment.

I cannot say what is the proportion of cures effected by these different methods; it would require many years of research to ascertain. It will perhaps be known at some future day, but at present, I can only state to you the most general facts. When, by the means I have spoken of, the patient is revived from

his stupor, if these physicians discover much fever, they bleed, either with the lancet or by leeches applied to the epigastrium: then, if the patient be too much weakened by loss of blood, they give him ether or seltz water; in a word, the medicine is suggested by the symptom.

These results are more favorable than those of Brown's treatment. It is the prevalent method in this capital, and to this we owe a great advantage in the mortality over other countries where the disease has appeared.

We come now to the *physiological treatment*, which we employ. I wish to describe, and if possible, to justify it. We made, at first, some experiments with hot drinks and stimulants, moved, as we were, by the coldness of the patients: but as these means did not succeed, we abandoned them, and have not recurred to them. I watched the patients carefully; I gave them, not camomile, for I dared not go so far, but mallows, and similar things. They said to me, 'I beg you to give me something cold; I am tortured by the hot drinks; I have a terible burning in the throat, and I beg you to cool it in some way.' Their countenance brightened in saying this, but they afterwards fell into a still greater dejection. I concluded, from examining the bodies, and from the confession also of the patients, that stimulants were of no use. I then administered cold drinks; the patients drank freely, but the evacuations redoubled in consequence. I recollected that ice had been employed to advantage in Germany; but I only had a vague and unsatisfactory idea of the manner in which it had been used. It occurred to me to diminish the drinks and give them ice. When the patients had copious evac-

uations both ways, I caused ice to be given them to eat, with the injunction to swallow it. They took the ice with delight: the tongue was cold, the pulse extinct, and the body chilled. When the tongue is observed to become red, the skin to resume its color, and the blackness to disappear, the ice may be discontinued and the drinks given; but while the physician is endeavoring to restore the moisture of the mouth and the interior of the body, the gastrite is developed, reaction is going on, the nature of the inflammation is changed, and consists in a rapid congestion towards the digestive canal. The vomitings and stools continue, and the pulse is accelerated; from being slight and hard, it becomes fuller and softer, the brown color of the skin passes gradually away, and one is surprised, the next day, to see the patient with the signs of commencing inflammation of the stomach and bowels. In the mean time, when he is troubled with thirst you may give him some drinks, which you may be sure he will absorb. The danger is of filling the intestinal canal at the moment it is choaked up. When the asphyxia and blackness have disappeared, and the patient has recovered his strength, you conduct him slowly without stimulus, waiting till he has become slightly cold, and till the tongue, which had become a pale red, but not more pale than when it first grew cold, has recovered its ordinary color. This is the substance of the treatment for the interior. For the exterior, heat may be applied; it should be directed to the lower extremities. It is not well to accumulate heat upon the breast; the patient cannot support it; they have, on the contrary, a desire to uncover themselves, which seems to aid their respiration, and they derive sensi-

ble benefit from it, and express their satisfaction. If on the other hand, you force them to have the breast covered, if you place them under a blanket or down covering, they appear to suffer extremely, and beg you to uncover the breast a little. The public is still the dupe, in this respect, to prejudices which have been brought from Germany. I will speak here of friction : it is certain that there are establishments at Paris, where the persons employed in rubbing, sweat themselves, before they excite any perspiration in the patients. On the contrary, this stimulus only increased the anguish of the sick, and chilled them after the first few moments, by leaving them uncovered. It is not enough to apply cooling substances internally, and heating ones without ; the inflammation must be combated ; and for this purpose we employ leeches. Bleeding can be rarely resorted to, the blood being very thick, and having somewhat the appearance of jelly. Its fluidity may be momentarily restored by rubbing the arm of the patients, or by plunging it into hot water ; but all this produces no essential result. In order that the bleeding may be of any use, the patient must be taken in the earliest stages of the disease. I then cause leeches to be applied to the epigastrium and the lower part of the abdomen. The leeches draw nothing at first, but in proportion as circulation is promoted by the ice, and at the same time by emollient poultices placed upon the abdomen. A quantity of blood is taken by the leeches, so as to aid the cure. You will ask me, perhaps, how the want of ice may be made up ? I answer, that nothing is so good as ice. Nevertheless, I think that small draughts of cold water may be of use. Besides this, there are in almost all places, persons who understand

how to produce ice by artificial means, by using oxide of manganese, sulphuric acid, or muriate of soda. Ice must be procured, if possible; but if it cannot be obtained, the want of it must be supplied by taking small quantities of fresh water. Blisters and mustard seed poultices should be employed afterwards to prevent congestion of the brain. Leeches may be applied with advantage to the temples, and upon the jugular vein; poultices and warm applications of mustard-seed should be placed upon the extremities; and hot vapor baths should be used, at the same time applying ice and cold water.

It may be said, perhaps, you are exclusive then. Will you allow us to give neither Æther nor Seltz-water to the patients who fall into syncope after bleeding? I beg pardon; I think this may be done; I would have the physician use stimuli when he perceives the pulse of the patient growing weak, provided he has ice in readiness to calm its effect. I have done this myself, and believe it advantageous, and I have done this, though very seldom, in this hospital, since I cannot be here at all moments of the day, nor can I choose my attendants, to watch the patients without interruption. But, in spite of this, I have obtained very remarkable success, since at present we do not lose more than one patient out of thirty or forty, while at first we lost about one out of six. The proportion of cures has been since augmented, because the patients have been brought to us before they had reached the last stages of the disease. Thus, you observe, I do not absolutely reject any system of treatment. Some persons have proposed narcotic glysters with laudanum. I will now express my opinion upon this. In the commence-

ment of the disease, if a stifled sound ensues when you touch the abdomen, this proves that it is not air which prevails in its cavity, but that it is full of the mucous matter of which I have spoken. If, in these circumstances, you administer glysters of rhatany, and other astringent substances, you will produce irritations; the matter will not be detached, but will mount up again; congestion of the brain will ensue, and you will be in danger of witnessing very disagreeable results: this practice must therefore be renounced. But when the patients have been bled, and their evacuations have been abundant, if they continue to experience pain in the lower part of the abdomen; if they are effected with terror, agitation and uneasiness, it is time to administer narcotic glysters. You will then obtain remarkable success, while, if you administer the glysters prematurely, the result will not be satisfactory. As to the quantity of opium, this depends upon the system adopted by the physician. There are some who reject opium and stimulants; others administer them in large doses. I prescribe but from five to ten drops of laudanum. I have given even forty drops when the patients were very much convulsed, but never any greater quantity. This, then, is the substance of my treatment. I allow no kind of warm drinks. The only time that I think them admissible, is when the patient begins to have an appetite. I then prescribe a cup of soup diluted with water, which revives the patient in an astonishing manner, so that he fancies himself cured. As to the length of time, we have had patients in this hospital, who have remained four or five days in a state of asphyxia and blackness; we expected, every moment, that they would die, but still they have recover-

ed to the great astonishment of the assistants. We have had instances of the recovery of patients who had become black or dark colored, and this has been owing to the use of ice and cold drinks.

I now proceed to the treatment at the time of predisposition. When a person, affected with irritability of the digestive canal, sees that the cholera has broken out in the place where he lives, he should commence by diminishing the quantity of this food at least one half. This is called the *prophylatic treatment*. Only a small quantity of vegetables must be eaten: I do not say that they should be entirely given up, but used very sparingly. You should eat eggs, veal, and poultry, and not drink much between meals; and not at all, unless you are thirsty. Great moderation must be used in this respect. All kinds of uncommon and violent fatigue must be avoided; and also sexual intercourse, which easily fixes the disease in feeble subjects; the regular habits of life must be kept up, and not deserted for any invitation, nor upon any occasion. I have known many persons, who, after preserving themselves a long time from the malady, fell into some excess, and were attacked the next day, and some died in a few hours. All persons, or, at least those who have not uncommon courage and firmness of character, should avoid the sight of patients suffering with cholera, as there is something very frightful in the contortions of their countenance; and one must be accustomed to attend patients, in order to behold, with indifference, so terrible a spectacle. Fruit and milk must be given up; there are persons, however, who digest milk perfectly, and these need not renounce it. There are others who are constantly disordered by milk, which occa-

sions in them an almost continual diarrhœa; besides this, there are others who regard coffee and milk as a daily purgative and such persons should abstain from it. I know there are some who say, "If I do not take coffee with milk, I shall have no stool." I answer them, "Give up your coffee and milk, should nothing pass you for a week." All passion must be avoided, as this gives rise to great inconveniences. Above all, a resource against terror must be sought in the moral powers; for this malady, so terrible when suffered to progress, can, by attacking it in the very commencement, be made one of the least injurious from which human nature suffers. The cholera morbus, in fine, is one of those diseases which best prove the power of medicine. Had all the physicians in Paris agreed as to the manner of treating it, you would have seen wonders performed, and France would have been distinguished among the nations for effectually arresting the cholera; but this is impossible; the idea of uniformity of thought is a chimera, an utopia, to which no reasonable man can yield himself up.

When the disease commences with some precursory symptoms, this is truly the moment of triumph. If a man who has commonly one stool a day, perceives, all at once, a relax, in the middle of the night, without cause or motive, and that the evacuation of ordinary matter is followed by a white mucous substance, depend upon it, this man is attacked with the first degree of cholera. In this situation, it is very easy to cure him, as I have already ascertained. There are physicians who are satisfied with prescribing brandy, astringents, diascordium, simarouba, and rhatany, with glysters and other things of the kind. They re-

commend, also, a diminution of nourishment. But these are only half means. Go at once to your object, cut off the food, apply leeches to the anus, if the pain be in the lower part of the abdomen, and to the epigastrium if it be in the stomach. Make free use of the leeches, and of ice, and you are sure of success, unless you have to deal with patients whose viscera were previously disordered; and we must always except such cases.

I repeat what I have already told you; it is an eternal truth—if your patients have organic affections of long standing, above all, if they be aged, you must not flatter yourselves that a cure will be so easily effected; but when success is possible, you will obtain it. It is much more prudent to impose this regimen upon them, for two or three days, than to give them chicken and rice, with soup. Be severe, and make no change in your prescriptions, for if you authorise three mouthfuls, the patient will be sure to take five, and the whole fruit of your labor will be lost.

This is all, gentlemen, that the actual state of my knowledge, and my ideas on the cholera morbus, allow me to say to you, and I shall be extremely happy if you can derive any advantage from my remarks."

[This discourse was followed by lively, and long continued applause.]

CAUSES OF THE CHOLERA, AND METHODS OE PREVENTION.

In commencing an inquiry as to the causes which produce the cholera, the first question that requires an answer, is, whether the disease is contagious or epidemic. Upon this delicate and difficult subject, medical men are much divided. They may be divided into three classes, who hold to different opinions.

1. The first, though least numerous class among the intelligent medical men, are the *exclusive contagionists*, who believe that the cholera is communicated from an unhealthy body to a sound one, by approximation, or actual touch. To this class belong also the great mass of the non-medical community—the civil authorities of towns and those who have the power to make and enforce quarantine regulations; regulations which, as regards the prevention of cholera, have been of no use, but, on the contrary, as facts fully exhibit, have been productive of immense evils.

2. A larger class are the anti-contagionists, who believe that the cholera depends either on a general cause every where existing, or arises from numerous causes, the most powerful of which are, exposure to cold and humidity at night, and burning heat during the day, the abuse of stimulating liquors, bad food, want of cleanliness, &c. &c.

Some, like M. Schnurrer, suppose it is produced by a cause every where existing—the magnetic influence of the earth, which he calls the *telluric power*.

Mr. Loder, of Moscow, thinks the disease is primi-

tively nervous, and depends on an *electro-magnetic* cause.

Dr. Hahneman, a distinguished German physician, asserts that the miasmata of cholera arises from very small insects, too minute to be seen, but which attach themselves to all parts of the body. But these last opinions are now but *guesses at truth*, if true they should prove to be, and are undeserving of attention so long as they are not supported by facts.

3. A third, and probably an increasing class, are those who keep to a middle course, between the contagionists and the anti-contagionists, and believe in what is called the doctrine of *contingent contagion*. These say, that although the disease arises from some aerial or terrestrial influence, of which we at present know nothing, and over which we have no control, yet in the filthy hovels of the indigent, in the impure air of crowded apartments, the disease may, and sometimes does acquire a character of communicability, which it did not at first possess, and of which it is deprived, when these circumstances are not present, or when it occurs in well ventilated and cleanly situations.

Let us now inquire which of these opinions are supported by the most numerous and best authenticated facts.

The exclusive contagionists, in support of their opinions, advance the following facts :—

1. The disease was imported into Calcutta, and other places in Bengal, from Jessore, in 1817.

2. It has always followed the great travelled routes, such as the large roads, navigable rivers, &c., and has been transported from one country to another by vessels, armies, and caravans.

3. The nurses and attendants in cholera hospitals have frequently been attacked by the disease.

4. Several cities, fortresses, and private dwellings have established rigorous sanitory measures, and the cholera has not been manifested among them.

5. Individuals coming from places where the disease raged, have sickened of the cholera in a healthy town; and soon after, several of their attendants have died of the same disease.

6. The cholera was imported into Mauritius by the Topaze frigate, which sailed from Calcutta while the disease was raging there.

7. The disease was imported into Orenburg, by caravans, from central Asia.

8. It was brought to Dantzic, by a vessel from Riga, the captain of which ship, died the day of his arrival, and afterwards the disease spread to the town.

9. The cholera was imported into Sunderland from Hamburgh, or from some of the ports on the continent of Europe.

10. It was brought into Canada by vessels and emigrants from Ireland.

To these strong and striking facts, the Anti-contagionists reply, in general terms, that many of the facts alledged, will not bear investigation. That many of them are not true; and that all can be explained without resorting to the belief that the disease is contagious.

They say the inhabitants of every town, and country, are exceedingly averse to admitting that a pestilential disease has originated among themselves, and are ever ready to lend a willing ear to tales of its importation, and easy credence to any facts that tend

to sustain their opinions. That during the prevalence of any *general epidemic*, some facts will undoubtedly occur, which may be brought to support the contagiousness of the disease, while the general course of the malady demonstrates that it is not so. This is strikingly true of the influenza as will hereafter be shown.

But to the facts adduced by the contagionists, their opponents reply in detail:

1. That it was not imported from Jessore into Calcutta and Bengal, as on full investigation it was proved by the most conclusive testimony, that it occurred nearly at the same time, in various parts of the province, between which there had been no immediate intercourse. Further,—in India, the contagious nature of cholera is denied by 99, out of every 100 medical men in that part of the world. (*Dr. James Johnson.*

2. If it was true that the cholera has been restricted to great roads and rivers, it might be accounted for from the fact that there, men collect in the largest masses, where they are most exposed to all the causes which the anti-contagionists say produce the disease, such as filth, intemperance, want of food, pure air, &c. &c. But the fact is doubted. Surgeon Mitchell, in his report from Palmacottah, says, 'as far as I can learn, the cholera appears to have made its approach by neither of the *great roads*. Commencing its ravages here, to the eastward, a little north of the fort, it spread pretty generally through the small, low, dirty houses, in every direction. The hospital seems to have escaped, probably because the building stood upon high and open ground."

But the following statement from Mr. Bell, author

of one of the best works on the cholera, and who served in India from 1818 to 1829, where he saw much of the disease under every possible aspect, is a triumphant argument against the exclusive contagionists:

"But it has been said to accompany troops, in marching into a district where it had not previously prevailed, and into which it has thus been introduced. This statement is so much at variance with the well ascertained habits of the disease, that it would require the most minute inquiry, and unquestionable evidence, to entitle it to credit. It has been repeatedly ascertained, that cholera patients may be carried into hospitals crowded with patients laboring under other diseases, without these, or numerous hospital attendants, having the disease communicated to them. Yet it is asserted, that a regiment, travelling at the rate of six or ten miles a day, has carried the disease along with it a hundred miles or more, communicating it to the inhabitants as it passed on! We have seen that a camp, by shifting ground a short distance, has put a stop to the ravages of the disease. And is it to be believed, that a regiment cannot get rid of it, with no cause but contagion for its continuance, by ten or twenty marches? I conceive, that this supposed proof of a contagious quality in cholera may be otherwise accounted for. When travelling on circuit, I have found the disease prevailing in a district, before any report had been made of the fact, notwithstanding the most positive orders on the subject; and I am persuaded, that were any of the instances adduced in support of the statement under consideration, strictly inquired into, it would be found that the usual apathy of the natives of India had prevented

their noticing the existence of the disease, until the fact was brought prominently forward by the presence of Europeans. It should also be borne in mind, that cholera asphyxia is not a new disease to these natives, but seems to be in many places almost endemical; whilst it is well known, that strangers, in such circumstances, become more obnoxious to the disease than the inhabitants of the country. Moreover, travellers have, superadded to the remote causes of the disease, fatigue and road discomforts, which are not trifling in a country where there are neither inns nor carriages.

The following extract from the Journal of my first journey in India, is illustrative of some of the peculiarities, in this disease, to which I have adverted. In July 1819 I marched from Madras in medical charge of a large party of young officers, who had just arrived in India, and who were on their way to join regiments in the interior of the country. There was also a detachment of Sepoys, and the usual numerous attendants and camp-followers of such a party in India.

The cholera prevailed at Madras when we left it. Until the fifth day's march, (50 miles from Madras,) no cases of the disease occurred. On that day several of the party were attacked on the line of march; and, during the next three stages, we continued to have additional cases. Cholera prevailed in the country through which we were passing. In consultation with the commanding officer of the detachment, it was determined that we should endeavor to leave the disease behind us; and as we were informed that the country beyond the Ghauts was free of it, marched without a halt, until we reached the high

table land of Mysore. The consequence was, that we left the disease at Vellore, 87 miles from Madras, and we had none of it until we had marched 70 miles farther, (7 stages,) when we again found it at one of our appointed places of encampment. But our camp was, in consequence, pushed on a few miles, and only one case, a fatal one, occurred in the detachment. The man was attacked on the line of march. We again left the disease, and were free from it during the next 115 miles of travelling. We then had it during three stages, and found many villages deserted. We once more left it, and reached our journey's end, 260 miles farther, without again meeting it. Thus, in a journey of 560 miles, this detachment was exposed to, and left the disease behind it, four different times; and on none of those occasions did a single case occur beyond the tainted spots."

3. That some of the attendants on cholera patients have been attacked by the disease is undoubtedly true, yet facts from all countries where the disease has prevailed, abundantly exhibit that they are no more liable to the disease than other classes in the same community, who are engaged in laborious employments. Reports from India, Russia, Poland, England, France, Canada and New York, all concur in the fact of the remarkable exemption of the attendants upon cholera patients. The proof of this statement will be found in another part of this work.

4. That some cities and fortresses which established rigorous quarantine regulations, have escaped the disease, is very true; but it is also true, that other places immediately adjoining those which were attacked, have escaped, notwithstanding *every precau-*

tionary measure had been omitted. It is further true that numerous countries, cities, and fortresses have adopted and enforced the most severe preventive regulations; they adopted them early, and executed them with rigor, and yet the disease appeared among them. All that quarantine enactments can do towards preventing the spread of a disease from one country to another has been done in Russia, Austria and Prussia.

In Russia immense lines of troops were formed for arresting its progress: St. Petersburg was entirely surrounded by cordons sanitaires; but all these regulations enforced by a powerful and despotic government were unable to prevent the approach and the spread of the cholera throughout the Russian Empire. The efforts of Austria were equally unavailing, for in a short time the disease passed her triple cordons and invaded the country from Poland. Prussia employed sixty thousand of her best troops to enforce her rigorous restrictions, and travellers bear testimony to the severity with which they were enforced. "And what have been the results? An immense expenditure of money, the suspension of commerce, a stop put to industry, multitudes deprived of the means of acquiring subsistence, and whole families plunged into misery, and rendered favorable subjects for the disease; *but no stop to the extension of the disease*, on the contrary its progress was rendered more fatal. As an instance of this, Breslau may serve as an illustration; and a warning to other cities. That city contains 90,000 inhabitants, active, commercial and industrious, many of them manufacturers and artisans. A quarantine of twenty days, with difficulties almost insurmountable which it entailed, was established at the borders of the province and maintained with a ri-

gor, *which might serve as a model to other nations.* But in the midst of this apparent security, a woman living in a damp part of the town was attacked by the cholera, and in a few days the disease spread. *The most minute researches on the part of the public authorities could not discover any communication between this woman and any stranger or goods suspected of being infected.* But when the disease spread, the authorities saw *too late* the deep injury which their sanitary measures had inflicted ; a multitude of families, and thousands of individuals were plunged in extreme misery, *for the sudden cessation of commerce, and consequent suspension of labor, had deprived them of the means of subsistence.*"*

Taught by sad and lamentable experience, Russia, and Austria, and Prussia have withdrawn their cordons and acknowledge not only their inutility, but that they are productive of immense evils. Indeed all the nations of Europe are abandoning severe quarantine regulations, and it is hoped that the cities of this country will not adopt them, but place all their reliance for the prevention of the disease, on the removal of those causes which in all countries have appeared to produce it.

5. Individuals coming from infected districts, and becoming sick with the cholera in a town where the disease had not before prevailed; appear to have communicated the disease to their attendants, who have soon sickened and died. Such instances are not numerous though they have been witnessed in all countries. Thus the Bombay report says, that a man left Panwell, whilst the disease prevailed there, arrived at Bombay and was attacked and died ; the

* American Journal of Medical Sciences, May 1832.

next day his wife, and the wife of the man who lived next door, and soon several of the neighbors died of the same disease.

Scouttetten, relates the following instance. An European left Madras, where the cholera existed in Oct. 1818; fell sick on his journey and died at St. Thomas-du-Mont, where the disease had not appeared. The next day his wife died; two days afterwards the landlord perished, and in two days more the landlady and domestics were attacked. Several cases of a similar kind are furnished by the Russian official documents. In this country we have had a few similar cases. Thus a woman and child, from New York, where the disease prevailed, arrived at New Haven, Con. in the steam boat; they were exposed to the wet on landing and fatigue by walking. They both sickened; and were reported by the physician who attended them to the Board of Health as cases of Asiatic cholera, of a mild character. These two cases recovered. But soon after the parents of the woman that had recovered, and who were intemperate persons, sickened and died of the disease. It is said the family were in a destitute and filthy condition.

Cases of the same character and accompanied by like circumstances occurred at Hartford, in the same state. A colored man went from Hartford to New York while the disease prevailed there. He complained of ill health before he left Hartford, and on his return from New York was attacked by diarrhœa which continued several days, and greatly reduced him. July 20th he took castor oil which reduced him still more and increased his diarrhœa. The afternoon of the same day, he was attacked by

vomiting of a light colored fluid resembling rice water, and the discharges from the bowels were of the same character. He had cramps of the extremities and other symptoms which induced his attending physicians to report the case to the Board of Health as one of Asiatic cholera of a mild character. This man recovered, but his parents, said to have been intemperate, and who had attended upon their son, had lodged in the same room, and had been deprived of their usual rest, and who immediately took cathartic medicines: sickened two days after the attack of the son, and both died, with the symptoms of cholera.

Instances like these, though they are not numerous, have convinced many of the contagious nature of the disease. But do facts warrant this conclusion? Are we bound to believe, from the facts presented, that these cases were produced by some specific poison brought from New-York, and emanating from the body of the sick person, affected those that were well? Were none of the causes present which in every other country, have, in alliance with the general epidemic influence, sufficed to produce the disease, or are they in these cases to be deemed inoperative, and to pass for nothing? Is the natural anxiety of parents,—intemperance, night-watching, the terror arising from the assurance that the first case was Asiatic and malignant cholera, brought from a place where it was daily destroying great numbers,—the injudicious use of cathartic and preventive medicines, accumulated filth, crowded, ill ventilated rooms, to be considered wholly inert in producing the disease in Connecticut, although all these causes existed

there, and are the very causes that we are assured by medical men, and by the evidence of innumerable facts, have served to produce the disease in all other countries?

The medical authorities of Orenburg, of Dantzic, of Moscow, of St. Petersburg, of Sunderland, of Quebec and Montreal, of New-York and Philadelphia, and most other places where the disease has prevailed, have stated that it was impossible to trace its introduction from abroad into any of these places, but that the disease developed itself spontaneously in all of them.

In reply to the arguments in favor of contagion, derived from the cases at New-Haven, Hartford, &c. the anti-contagionists say, that other cases of a more malignant character have been witnessed in different parts of the country, and yet none of the attendants on these fatal cases have had the disease. Is a mild case of cholera more likely to be contagious than a severe and fatal one? A man from New-York died of cholera on board of a steam-boat at Hartford. Many individuals attended upon him, and the crew of the boat, consisting of more than 20 persons, were exposed. They took care of him when sick, and assisted in burying him, and were confined on board the same boat for several days, and yet not a single individual has been affected by the disease.

A man left New-York when the disease prevailed there; sickened and died of the cholera at Brookfield, Mass. Not one of his attendants have had the disease.

But the occurrence of the cholera at Providence, R. I. affords, say the anti-contagionists, a triumphant

reply to the arguments of the contagionists, and is in accordance with the general facts respecting the occurrence of the cholera in most of the places where it has appeared.

All the facts connected with the first appearance of this disease at Providence, are so important, that I shall insert the whole of the Report of the Special Medical Council of the Board of Health.

Report.—"It has become our painful duty to announce to the public, the occurrence of four cases of epidemic cholera, in this city.

The following is a brief statement of the most important facts relative thereto, viz.

John Thurber, (aged about 50,) the first individual attacked, has enjoyed unusually good health, for some time past, until Wednesday, July 25th, when he was seized, (as persons often are, in summer,) with vomiting and purging, which the family endeavored to combat until Monday morning, when their efforts not proving successful, Dr. Utley was sent for, who, by the use of ordinary means, succeeded in relieving the patient; he afterwards appeared to be in a fair way to recover, until last evening, (July 31st,) when, as was supposed, from the mental excitement produced, by hearing of his wife's seizure, he relapsed, and was also attacked with violent spasms of the hands and feet, which have continued in a milder form to this time; but from the presence of other symptoms, his situation now is extremely critical.

The second individual taken sick was Mrs. Thurber, as above noted. She first complained yesterday forenoon of a slight uneasiness in the bowels; this, however, did not attract particular attention. About

3 o'clock, P. M. she was seized with violent vomiting, purging, and cramps, that continued at intervals until a few hours previous to her death, which took place at 7 o'clock this morning.

The third patient was a young girl by the name of Slocum, aged 3½ years. She went to school, apparently in perfect health, yesterday afternoon. At a quarter before 5, she complained to the instructress of feeling sick, and was in consequence sent home. Soon after reaching home, vomiting and purging set in, which were shortly followed, according to her mother's account, by coldness of the surface, and a cessation of the pulse at the wrist. The usual symptoms noticed in this disease shortly ensued, and continued to increase until her decease, which happened at three o'clock this morning.

The fourth case is a sister of the preceding one, aged 5; she first began to complain about half past 3 this morning, with pain in the bowels; which was soon aggravated and followed by the symptoms already alluded to; she is now in a state of collapse.

The attending physician thought it advisable to call in, in the course of the night, (of the 31st July) the following gentlemen in consultation, viz:—Doctors Fuller, Mauran, Miller, Webb and Hartshorn; who, after a careful examination of the patients, gave it unanimously as their opinion, that they labored under the same disease as has extensively prevailed in New-York, and elsewhere.

At the time of the consultation, Mrs. Thurber was in a confirmed state of collapse; there were the peculiar appearance of the countenance, the change of voice, coldness of the tongue and breath, impercepti-

bility of the pulse, corrugated appearance of the hands, &c.

Post mortem examinations were made of the two deceased patients, in the presence of a large majority of the medical faculty. The appearances presented were such as to convince all of the correctness of the opinion previously formed of the cases, and corresponded precisely with what had been witnessed in New-York by several of the physicians.

All of these cases occured in the same house, which is situated in Field Street, on Eddy's Point, on the west side of the river, and its location, as far as we are enabled to judge, is a healthy one.

Upon enquiring, we were informed that there had been no communication between the inmates of the house, and any individual from New-York, or other places where the cholera prevails, or has prevailed. Mr. Thurber and wife resided in New-York, with their son-in-law, until the 11th of June, when they removed to this place, and have, previous to the attack now described, enjoyed their usual health. The date of their quitting the city of New-York, was three weeks previous to the official announcement of the cholera in that place, and two days subsequent to its first appearance on this continent.

The preceding brief account is respectfully submitted for the information of the public, by order, and in behalf of the medical gentlemen of this city.

LEWIS L. MILLER,
LEANDER UTLEY,
THOMAS H. WEBB,
ISAAC HARTSHORN

Providence, Aug. 1, *one o'clock, P. M.*"

The above facts are very deserving of consideration. The first case appears to have been like ordinary seizures of vomiting and purging, and yielded to ordinary treatment, until the mental excitement produced by the seizure of his wife aggravated all his symptoms, and produced a relapse of which he died. It serves to show the close connection between the common cholera of our country, and what is called Asiatic cholera, and how easily fear, and other causes may transform the one into the other. The influence of fear in producing and aggravating the cholera, has been acknowledged by almost all writers upon the disease, but its influence, it appears to me, has been underrated and misunderstood ; I shall therefore recur to it in another place.

6. It has been said the cholera was imported into Mauritius, by the Topaze frigate, from Ceylon. To this, it is replied, that Dr. John Kinnis, who resided at Mauritius, and had charge of a hospital there, in a report addressed to Sir James M'Grigor, and published in the Edinburgh Medical and Surgical Journal for 1821, says, that 2 cases of the disease occurred 3 weeks before the arrival of the Topaze, and when the vessel did arrive, the surgeon of the frigate stated, that not one of the crew were affected by the cholera; and Dr. K. from personal observation, assures us that not one of the patients sent from the Topaze to the hospital, labored under symptoms of cholera; and further, that the disease did not break out among the attendants on these men, but among the African slaves and Indian convicts.

The disease soon run its course in this island, and then appeared at Bourbon, in defiance of a most rigorous quarantine.

7. The disease was imported into Orenburg, say the contagionists, by caravans from Asia. To this their opponents reply, that the last caravan that arrived at Orenburg, reached that place thirty-five days before the first case of cholera appeared, and that the individuals composing it, were all in good health, and had not imparted the disease to any of the frontier towns through which they had passed.

8. It was brought to Dantzic by a vessel from Riga, it has been said. But Dr. Dalmas, a member of the Medical Commission, sent by the French Government to Warsaw, investigated the subject himself at Riga; and states, as the result of his investigations, the following facts, which have not been denied.

1. That the cholera did not exist at Riga, at the time of the sailing of the vessel mentioned. 2. That the cholera did not appear on board the ship during the voyage. 3. That the cholera appeared at Dantzic before the arrival of the vessel; that it broke out in the town before it appeared at the port; and lastly, the cordon sanitaire did not protect the neighboring places. These assertions Dr. D. supports by proofs, too abundant to detail.

9. The advocates of contagion say, the cholera was imported into Sunderland by vessels from Hamburgh, or from some port in the north of Europe. Such an origin of the complaint at Sunderland, was widely circulated in the newspapers; but on investigation, it has proved to be wholly without foundation. The disease first manifested itself in a part of the town more than two miles distant from where the vessels were lying, and among those who had no communication with the port. Besides, both Dr. Brown, and Dr. White, of Sunderland, state, that the

same disease, accompanied by all the symptoms ascribed by observers to the Asiatic cholera, prevailed there in August, two months before the arrival of the vessels that are charged with having brought the disease from the continent.

10. Again, it is said, the cholera was imported into Canada by vessels and emigrants from Ireland. The board of health at Quebec are in possession of no facts calculated to show that the disease was imported into that city, and the most eminent physicians of Montreal, and the most enlightened citizens in that city are satisfied that it is an epidemic, and not a contagious disease. They say that many cases of cholera occurred six weeks before the vessel and emigrants arrived.

I have thus given some of the most important facts produced in justification of their belief, by those who say that the epidemic cholera which now prevails in this country, and many other parts of the world, is a contagious disease. I have also given what many of their opponents upon this subject, call a complete refutation of them. And upon a review of all the facts and arguments which have been adduced by both parties, upon this difficult subject, surely, the conscientious enquirer after truth, will be oliged to confess that if the cholera is at all, or under any circumstances a contagious disease, it is so but in a trifling degree, and that generally, it is propagated by other means than by the transmission of some poisonous substance from the diseased to the healthy.

The anti-contagionists say, the cholera has always been an endemic disease in India, but that in 1817 it assumed an epidemic character. The cause which produced this character, like the origin of most

general pestilences, is still a mystery. Probably, however, it is some atmospheric phenomenon. Mr. Scott, Dr. Jameson, and Mr. Annesley, say that the seasons preceding the appearance of the epidemic in India, were remarkable for atmospheric vicissitudes, and the disease appeared at the commencement of a rainy season, so excessive as to convert the whole delta of the Ganges into a sheet of water.

But what that epidemic influence is, which has made cholera prevail so extensively since then, and diffused it over the world, we do not know, any more than we know the cause of any epidemic. We do, however, know that there are predisposing and exciting causes, which, if avoided, even when the general epidemic influence prevails, will, for the most part, serve to protect people from the cholera, or transform the disease from a highly malignant and incurable disorder, into a mild one, over which medicines have great control.

These causes so necessary to be known, and to be avoided, are exposure to cold and moisture, or sudden changes from heat to cold, a scanty, poor, or bad diet, lodging in crowded, damp, or ill-ventilated rooms, or upon the ground, fear and mental anxiety, accumulations of filth among a crowded population, excesses of all kinds, especially intemperance in the use of stimulating drinks, &c. &c. &c.

These causes have ever been sufficient to produce sporadic cases of cholera, in all countries, and when more powerful, they may cause the disease to be epidemic. If it is asked why these causes have never before produced the disease in the United States, we reply by asking, why it did not appear at Jessore in 1800, or in 1820, or some other time, instead of 1817.

All we can infer from the facts given us respecting the disease, is, that exactly the same causes could never have been in operation before, in either place. In proof that the causes assigned, serve to produce and aggravate the disease, we are told they were all in operation in the towns of India, when the disease prevailed.

The population in most parts of India, is very dense, and in the large towns, exceedingly so. The following account of Calcutta, from the correspondence of the lamented Bishop Heber, is applicable to most of the cities and towns in India :—

"*Calcutta, Dec.* 15, 1823.

Of the country, we have as yet seen little, except in one voyage up the river, and in the vicinity of Calcutta. But all Bengal is described to us as like those parts which we have seen, a vast alluvial plain, intersected by the innumerable arms of the Ganges, overflowed once a year, but now covered with fields of rice, divided by groves of tall fruit-trees, with villages under their shelter, swarming with a population beyond any thing which Europe can show, and scarcely to be paralleled in China. Calcutta, when seen from the south, on which side it is built round two sides of a great open plain, with the Ganges on the west, is a very noble city, with tall and stately houses, ornamented with Grecian pillars, and each, for the most part, surrounded by a little apology for a garden. The churches are not large, but very neat, and even elegant buildings, and the government house is, to say the least of it, a more showy palace than London has to produce. These are, however, the *front lines;* behind them ranges the native town, deep, black, and dingy, with narrow crooked streets, huts of earth baked in the sun, or of twisted bamboos, interspersed

here and there with ruinous brick bazars, pools of dirty water, coco-trees, and little gardens, and a few very large, very fine, and generally very dirty houses, of Grecian architecture, the residence of wealthy natives. There are some mosques of pretty architecture, very neatly kept, and some pagodas, but mostly ruinous and decayed, the religion of the people being chiefly conspicuous in their worship of the Ganges, and in some ugly painted wooden or plaster idols, with all manner of heads and arms, which are set up in different parts of the city. Fill up this outline with a crowd of people in the streets, beyond any thing to be seen even in London; some dressed in tawdry silks and brocades, more in white cotton garments, and most of all black and naked, except a scanty covering round the waist, besides figures of religious mendicants, with no clothing but their long hair and beards in elf locks, their faces painted white or yellow, their beads in one ghastly lean hand, and the other stretched out like a bird's claw to receive donations; marriage processions, with the bride in a covered chair, and the bridegroom on horseback, so swathed round with garlands as hardly to be seen; tradesmen sitting on the ground in the midst of their different commodities, and old men, lookers on, perched naked as monkeys on the flat roofs of the houses; carts drawn by oxen, and driven by wild looking men, with thick sticks, so unmercifully used as to undeceive perfectly all our notions of Brahminical humanity; attendants with silver maces, pressing through the crowd before the carriage of some great man or other; no women seen, except of the lowest class, and even these with heavy silver ornaments on their dusky arms and ankles; while coaches, covered up close with red cloth, are seen convey-

ing the inmates of the neighboring seraglios to take what is called the 'air;' a constant creaking of cart wheels, which are never greased in India; a constant clamor of voices, and an almost constant thumping and jingling of drums, cymbals, &c., in honor of some of their deities; and add to all this a villainous smell of garlic, rancid coco-nut oil, sour butter, and stagnant ditches, and you will understand the sounds, sights, and smells of what is called the 'Black Town' of Calcutta.

The singularity of this spectacle is best, and least offensively enjoyed on a noble quay which Lord Hastings built along the shore of the river, where the vessels of all forms and sizes, Arab, Indian, Malay, American, English, the crowds of Brahmins and other Hindoos washing, and saying their prayers; the lighted tapers which, towards sun-set, they throw in, and the broad, bright stream which sweeps them by, guiltless of their impiety, and unconscious of their homage, afford a scene such as no European, and few Asiatic cities, can at all parallel in interest and singularity."

Mr. Kennedy, in his history of the cholera, says, it was amongst the swarming population of these filthy receptacles, who barely subsisted on a meagre diet of bad rice, who worked hard in the sun during the day, and who lodged in their small mud hovels, and not unfrequently with cows and other animals, that the cholera run a long and wide career of destruction.

Dr. Young, in his remarks upon the cholera morbus, as it prevailed in the villages around Calcutta, says, there are in the lowest and most thickly inhabited quarters, many ditches of stagnant, filthy water, on the margins of which, the natives sleep, during the hot and

sultry nights. In such situations, he says, the cholera raged with double and dreadful fury, while the dryer, better drained, and more thinly inhabited parts of the town, suffered comparatively but little,

Every where, the disease has not only been most severe in crowded, dirty towns, but has generally been confined to those parts of towns that are most so, and that are inhabited by the poor and suffering portion of the population.

For instance, the merchants of the town of Guntoor, who occupy spacious dwellings, in a wide, dry street, almost entirely escaped the disease, which raged with great violence among the people who resided in the close damp alleys of the town.

Multra, a filthy place, containing many dirty and crowded bazars, suffered severely, whilst Argra, a clean airy town, almost entirely escaped.

In Tripoli, a very clean town in Syria, only thirty-one were attacked, and five died, out of a population of 15,000, and the disease disappeared in a few days; whilst at Antioch, and other low and badly ventilated places, it prevailed for a long time, and raged with great violence.

The disease has, in all countries, manifested the like partiality for the most dirty and crowded cities; and for low and damp situations.

The following interesting observations on the statistics of Sunderland, from the work of Mr. Parsons, as published in a late number of the Medico Chirurgical Review, fully confirm the above statement:—

'The town of Sunderland consists of three parishes; viz. Monk Wearmouth, with a population of about 6,000,—Bishop Wearmouth, with 14,000,—and Sunderland with 20,000 inhabitants. In Bishop

Wearmouth nearly all the wealthy inhabitants of the town reside, and the number of its pauper population is very small; the streets are generally sufficiently wide and clean, and their elevation above the level of the river is from 110 to 120 feet. In Sunderland, which is a continuation of Bishop Wearmouth, there are very few streets of proper width, and their general elevation above the level of the river is from 70 to 90 feet lower than in the adjoining parish. The bye-streets are extremely narrow, several not being broad enough for the passage of a common cart, and during my residence in the town they were rarely cleansed from the dirt, and other impurities allowed to accumulate in them, for many days together. The houses in these bye-streets or lanes commonly had no yards or courts attached to them; the rooms were dark, ill ventilated and dirty; the passages and stairs were dirty through the great number of persons living in each house; and very often each room, from the cellars to the attics, was occupied by a whole family; Dr. Barry found 120 individuals living in one of these houses. In the parts bordering on the river, Monk Wearmouth closely resembles Sunderland in the crowded state of its poor inhabitants. For several years past it has been the custom in Sunderland for the parish managers to contract with some individual for the maintenance, &c. of the whole poor of the parish. When this plan was first adopted, now about seven years since, the annual expense for t his purpose amounted to upwards of 9000*l.*, the number of persons contributing to the poor-rates being at that time, as it is at present, rather more than five hundred, and consisting almost entirely of the shop-keepers and others necessarily resident in the place; but,

by means of the farming system, the annual expense has been gradually reduced to its amount in the present year, of between three and four thousand pounds, with, it is believed, a considerably increased number of claimants on the parochial funds. A necessary consequence of this cruel economy, was the state of great destitution in which the poor existed at the time of the appearance of cholera amongst them; and, although much was done towards improving their condition, by giving them clothes, bedding, fuel, &c. still it was found that individual exertions were manifestly unequal to counteract the ill effects, on the public health, of extreme and widely diffused poverty, and its too frequent consequences, a neglect of cleanliness, drunkenness from the immoderate use of ardent spirits, and the gratification of other depraved propensities. The death, by cholera, of Mr. Middlebrook, the late contractor for the poor, has released the parish from its engagement to him, and the system of farming the paupers is now, though late, abolished.'

The ravages of the disease were chiefly confined to the parish of Sunderland; in Bishop Wearmouth, which contains at least one-fifth of the whole population, but only a small portion of the pauper inhabitants of the town, a few cases occurred in the middle of November, and again in the beginning of December; but up to the 12th of that month the number of deaths in this parish did not exceed 20. In the parish of Monk Wearmouth but few cases occurred, not more than 15 deaths having taking place from the disease up to the same date.

With regard to the parish of Sunderland itself, the disease was almost exclusively confined to the low,

dirty, and confined lanes in thickly populated districts, not more than 12 cases having occurred in the upper and more widely-built portion, although the freest and most unrestrained communication existed with those places where the disease raged."

From the accounts which we have received from Quebec, Montreal, New York and other places where the cholera has appeared on this continent, we learn, that it has manifested the same tendency to prevail mostly in confined, low and dirty streets, where the population is crowded, and suffering for want of food, clothing, pure air, &c. &c.

But as I have said, there is another class of medical men who are neither contagionists, nor fully anti-contagionists, but who believe in the doctrine of *contingent contagion.*

They say that the cholera has for its essential and general cause some ærial or terrestrial influence, the nature of which we know nothing; but that in general this influence will not produce severe cholera unless aided by other causes, such as exposure to cold, want of proper food, and clothing, and pure air; or by intemperance, debauchery, &c. &c. In this way they believe the disease is generally propagated, but still they say, there are facts too numerous to be disregarded, or to be explained in any way, but by admitting that under certain circumstances, such as concentrated filth, bad air, and crowded rooms where the sick are confined, the disease may and does assume a contagious character, although it is not so essentially or generally. This party are however strenuous opposers of quarantine and other regulations,

of a rigid character, which have been imposed upon towns and countries, and which the whole progress of the disease has shown to have been of no utility whatever. The only practical use of this doctrine which its advocates wish to make, is a very desirable one,—to thoroughly cleanse the apartments of the sick, and remove from the same all individuals except necessary attendants. When this course is pursued they do not believe the disease possesses the character of communicability.

Among the innumerable facts, which they, in common with the anti-contagionists, adduce in justification of their disbelief in the contagious nature of cholera, the following, are but a very small part.

1. That the cholera is not a contagious disease, but arises from some atmospheric distemperature, is evident from the fact that its appearance in a place is usually preceded by sporadic cases of cholera, and the general prevalence of disordered digestion; and when the disease does appear as an epidemic, scarcely a single individual in the same town escapes having some disorder of the stomach and bowels. Almost every individual complains of diarrhœa. This statement is confirmed by all the accounts we have received from India, Russia, Poland, England and France, and it has been noticed in all the places where the cholera has prevailed in this country. The fact is so well known, that reference to authorities is unnecessary.

2. This atmospheric distemperature is, in many places, so powerful as to affect animals. Cattle and dogs died of cholera in India, goats and camels in Persia, chickens, turkeys, &c. in Moscow, and in Prussia, multitudes of fish died during the prevalence of the epidemic.

3. The sudden invasion of the disease, or the small space of time that elapses between perfect health and the full development of the disease, is very different from the slow progress of contagious diseases. At Bellamy in India, a tailor was attacked while at work, and died with his work in his hands, in the attitude in which he was sitting. A merchant while making a bargain was seized, vomited twice, and instantly expired. At Mecca, the invasion of the disease was almost instantaneous; individuals in perfect health were suddenly stricken to the earth, vomited, became cold, and died.—*American Jour. Med. Sciences*, 1832. These are, to be sure, rare instances, as the disease does not usually terminate fatally in less than from six to twenty hours, and not unfrequently it lasts several days.

4. The great numbers attacked simultaneously by cholera, and who had previously no intercourse with the sick, a fact which all writers on the disease admit, cannot be accounted for without supposing the disease to be epidemic.

5. The general exemption from the disease of medical and other attendants on the sick, goes to prove that the disease is not propagated from the sick to the healthy.

6. Dr. Jameson says, that of between 250 and 300 medical men engaged in practice in Bengal, but *three* took the disease.

7. At Bombay, none of the hospital attendants were attacked, though they were assisting the patients day and night. *Kennedy.*

8. The Madras Report says, in the hospital of the Royals only *one* individual out of 101 attendants was attacked; and at the receiving hospitals for cholera

patients at Trichinopoly, St. Thomas du Mount and Madras, the attendants were numerous, and sometimes shared the same bed with their patients, yet not *one* took the disease.

9. At Berhampore *none* of the native attendants on the cholera hospitals were affected. *Trans. Med. & Phys. Soc. of Calcutta.*

In Europe the same general immunity of the attendants on cholera patients has been witnessed.

10. A letter addressed to the medical council of Moscow, signed by eight chief physicians to the hospitals of Astrachan, says,

"We have all without any precaution touched and rubbed the sick. We have daily visited the hospitals crowded with cholera patients, where we have respired their breath, and yet we have neither contracted the disease nor conveyed it to our families. The attendants who nursed and applied frictions to the patients—who put them into the baths, changed their linen, and performed other offices for the sick, remained free from cholera."

11. The same letter adds, "In the military, as well as in the civil hospital, the linen and clothes of cholera patients, were transferred to other patients without being previously fumigated or ventilated, and nevertheless, those who wore these garments did not become affected with cholera." The same letter also states that "Several nurses and mothers affected with cholera, suckled their children, both during and after the disease, without the latter being attacked with cholera."

12. Dr. Lefevre, physician to the British embassy at St. Petersburgh, reports as follows:—

"I knew four sisters watch anxiously over a fifth,

severely attacked with the cholera, and yet received no injury from their care.

"In one case, I attended a carpenter in a large room, where there were at least thirty men, who slept on the floor among shavings; and though it was a severe and fatal case, no other instance occurred among his companions.

"In private practice, among those in easy circumstances, I have known the wife attend the husband, the husband attend the wife, parents their children, children their parents, and in fatal cases, where from long attendance and anxiety of mind, we might conceive the influence of predisposition to operate, in *no instance* have I found the disease communicated to the attendants."

13. During the prevalence of the epidemic at Moscow, 587 patients affected with cholera were admitted into a hospital with 860 patients, laboring under other diseases, yet, *not a single one of the latter became affected with cholera.*

Dr. Zudkoff of Moscow, who had been formerly a contagionist, says, that he saw to his great astonishment, that all the attendants, and all the soldiers handled the sick, and supported their heads whilst they vomited, without using any precaution, and yet without being attacked by the cholera.

14. Mr. Searie, who attends a very large number of patients in Warsaw, having charge of a hospital for the reception of the poor, writes, that not ONE of the hospital assistants—not ONE of the hospital attendants—not ONE of the nurses—not ONE of those who handled the dead, fell a victim to the disease.

15. During a period of the late epidemic cholera in Berlin, 409 houses were visited by the disease, and

in 279 of these, only one individual in each house was affected, while in the remaining 136, four or five suffered in each mansion. Such is the density of the population, in the parts of Berlin affected with the cholera, that the calculation assigns 4,200 families, making an average of four persons to each family, in the above number of houses, being an aggregate of 16,800, who lived in the immediate contact with cholera. Of this mass, 803 only were stricken with the disease, or about one in eighteen persons.

16. Dr. Albers, in his official report to the King of Prussia, states, that during the epidemic, it is certain that about 40,000 inhabitants quitted Moscow; notwithstanding which, no case is on record of cholera having been transmitted to other places.

17. In the marine hospital of St. Petersburg, of 43 attendants on cholera patients, not a single one was affected: and in the temporary hospital at the same place, of fifty-eight attendants, *one* only was affected with cholera, and he after drinking *kwass*, when very warm.—*Amer. Jour. Med. Sciences*, 1832.

18. Those engaged in post-mortem examinations of cholera patients, have not been attacked by the disease. 'Such examinations,' say the physicians of Astrachan, 'were made at our hospitals, without any precautions, with perfect impunity.'

19. Dr. Foy, at Warsaw, and ten others, inoculated themselves with the blood of patients laboring under the cholera, tasted their dejections, and inhaled their breaths, without receiving the disease.—*Gazette Medicale*, 1831.

20. As to the capability of merchandise to convey, and afterwards communicate the infectious germ of

cholera, the Central Board of Health, in a communication to the Privy Council, remark :—

'There is perhaps no question in the whole range of sanitary police, on which so many and such irrefragable facts can be brought to bear as on this; derived too, from the most authentic and recent sources.

Seven hundred and thirty ships loaded with hemp and flax, from infected parts of the Baltic, arrived at the different quarantine stations in this country, between the 1st of June and the 31st of December, 1831.

Many vessels also arrived laden with wool and hides, yet not a single case of cholera occurred on board any of these ships outside the Cattegate Sea, nor amongst the people employed in opening and airing their cargoes in the lazarets.

At the hemp and flax wharfs in St. Petersburgh, where several thousand tons of these articles arrived during the spring and summer of this year, from places in the interior, where the cholera existed at the time of their departure for the capital, the persons employed in bracking or sorting, and who generally passed the night among the bales, did not suffer so early in the season, nor so severely, as other classes of the general population.

The same observation holds good with respect to all the rope walks of St. Petersburgh, and the imperial manufactory of linen cloth at Alexandrofsky, where all the yarn is spun from flax bracked and hackled on the spot.'

21. In England, we find still further proof of the non-contagious nature of the disease :—

"Down to the 29th of February, 1832, agreeable

to the statement made to our government, by Mr. Aspinwall, American consul at London, but one medical practitioner had died of cholera in England, although at a moderate computation, 1,000 or more have been in constant attendance on choleric patients."

According to the Medico Chirurgical Review for April, 1832, 'not a single medical man has been affected by the cholera in Sunderland, Newcastle, or Gateshead.'

22. The cholera has not appeared to be contagious in France. 'From the medical officers of the Paris hospitals, Hotel Dieu and St. Louis, we have statements that, within those hospitals, the cholera has not shown itself to be contagious.'—*Report of Mass. Med. Soc. on cholera*, 1832.

23. In this country, we find the like general exemption from the disease among the attendants upon cholera patients. Some, to be sure, have had the disease, but they have, more than others, been exposed to all the exciting causes of the complaint. Most of the physicians of Quebec and Montreal are satisfied that the disease is of an epidemic character, and not contagious.

24. The following report bears testimony to the non-contagious nature of the cholera at New York.

"*Board of Health*, *July* 24, 1832.

The Special Medical Council presented the following report, which was read and directed to be published :—

To Walter Bowne, Esq.,
President of the Board of Health.

Sir,—I beg leave to address you upon the unnecessary haste with which the bodies of persons who

have died of cholera, have, in some instances, been interred.

The council are of opinion that the dead may, with perfect safety to the living, remain unburied for at least six hours, even during the present warm season, and, under proper precautions, for a much longer period.

They also deem it expedient that the public should know that the neighborhood of the hospitals and burying grounds has not been found, upon enquiry, to be peculiarly liable to the disease. At the public burying ground called the Potter's Field, where nearly one hundred bodies have been buried daily, during the past week, none of those engaged in the work have been taken ill; and of the one hundred persons living in the Asylum for the Deaf and Dumb, within 200 yards of the same, not one is known to have been attacked.

The medical and other attendants of the hospitals, not predisposed to the disease by their previous habits, have, also, so far as is known to the council, escaped its attack.

In behalf of the Special Medical Council,
ALEX. H. STEVENS, M. D. *Pres.*
By order of the Board of Health,
J. MORTON, *Sec'y.*"

25. Finally, if the facts which have been adduced by the contagionists are sufficient to prove the cholera to be essentially and generally a contagious disease, then every other epidemic which the world has ever known, may be proved to be so; for, as I have said, whenever any disease becomes general, some circum-

stances will unquestionably occur, to favor the idea of the contagious nature of the complaint. Take for example, the *Influenza*, which, I believe, is not considered at all contagious, at the present time; certainly it is not supposed to be propagated by contagion; yet as striking, and well authenticated, and numerous facts, and facts of the same kind, can be produced to prove that it is so, as has been produced to convince the world that the cholera is contagious, and therefore quarantine regulations are necessary, &c. &c. I will refer but to a very few.

Dr. Hamilton, describing the Influenza of 1782, says, "The first who were seized with the Influenza at Norwich, were two men lately arrived from London, where it then continued to rage. A sergeant in a regiment of foot, went to London on furlough; the disease then raged in the capital. He returned in a few days to St. Albans, affected, and communicated it to the people in whose house he had his billet. This was the first of its appearance there, and from thence it spread rapidly all over the town."

In 1803, the Influenza prevailed very generally in England, Ireland, and other countries. The London Medical Society, wishing to collect materials for a complete history of the epidemic, addressed letters to more than fifty distinguished medical men, in various parts of the country, requesting answers to certain questions. Among the questions proposed, were the following: Has the present epidemic differed from former ones which you have seen? Has the present epidemic influenza appeared to you to be contagious? Those who recollected former epidemic influenzas, generally answered that the diseases were similar; but more than one fourth of the physicians from whom

answers were received were of opinion that the Influenza then prevalent was contagious, the others, or about forty who returned answers, were of a contrary opinion. Among the facts stated by those who believed the influenza to be contagious, I find the following: Dr. Robert Percival, of Dublin, says the Influenza is "contagious, for it travelled from place to place, prevailed in London before it came to Dublin, &c. &c." Dr. Longfield, of Cork, says, "it appeared to be very contagious, as some boarding schools remained free until visited by some persons who brought it from the neighboring towns." Dr. Binns, of Ackworth, says, "that a school of 300 pupils in that town escaped the disease, and adds that at Crofton, another school of 60 young ladies wholly escaped the influenza, though it prevailed in the same village, and the young ladies were much in the open air, but care was taken to prevent communication with the infected."

Dr. Bardsley, physician to the Manchester Infirmary, states that "a gentleman of Manchester returned from London, while laboring under influenza, found his family all well, but next day three of them sickened of influenza, and two more on the following day. He further states, that the nurses of the House of Recovery fell sick soon after the reception of the first cases of influenza."*

It will be unnecessary to multiply similar instances; no doubt they are to be found wherever influenza or any other epidemic becomes general; and as numerous and striking in proof of the contagious nature of the disease, as any that serve to convince

* See Memoirs of the Medical Society of London, vol. 6.

people that cholera is so; and therefore quarantine regulations will be just as serviceable to prevent the spread of the influenza, as they can be, to stop the progress of the present epidemic cholera.

Means of Prevention.

The best method of preventing the cholera may be learned by attending to the causes which in all countries have appeared to produce the disease. These causes, and which are of course to be avoided, are impure air, low and damp dwellings, crowded and filthy houses and cities, poor diet, intemperance, fear, &c. &c.

Most countries and cities have published directions which have emanated from medical men, respecting the prevention of the disease. Such directions have undoubtedly been of great service. The following were published at Paris, by the *Central Commission of Health.*

Course to be pursued to prevent the Cholera.

"1st. The little danger there is of being attacked by the cholera, should keep up the spirits. We should, therefore, not disturb ourselves, nor should we think of the disorder, but to adopt the precautions necessary to guard against it. The less fear, the less hazard. But as tranquillity of mind is a great preservative, we must avoid every thing which excites strong emotions, anger, fear, great exhilaration, &c.

2d. It has been observed, that the purer the air, the less is the liability to cholera.

Too much attention therefore, cannot be paid to the salubriousness of our dwellings. Care must be taken that many do not occupy, much more sleep in, the same apartment, that the premises be ventilated in the morning, and in the course of the day, by

opening the windows and doors as often, and keeping them open as long as possible. It is proper also to place in dwelling houses, large earthen vases, containing chlorured water, (made by pouring upon one ounce of chloride of lime, one quart of water.) The purification of the air may be also produced by a clear and bright fire kept in the fire-place for a short time.

Care must be taken that the doors and windows are not opened until after one is entirely dressed, so as not to be exposed to chills. It will be best to pass into another apartment during this operation.

There should be no curtains about the beds, nor should any utensils be suffered to remain dirty, but be cleansed *as soon as used*, and always contain a little water. The humid air of dwellings, unhealthy at all times, becomes very dangerous when the cholera prevails, no clothes therefore should be dried in the sitting rooms, and especially not in the bed-chambers. Not only must the bed rooms be aired, but the utmost salubrity must be preserved in houses and out-houses. It is also important to cleanse privies with the greatest care, to purify them *once a day* with chlorured water, or water only. All their conduits should be closed except when in use.

Every one should take care that house slops are emptied as soon as produced, that they do not remain between the pavements of the courts and allies, and that they pass off rapidly by the conduits and gutters which carry them to the streets. It is necessary indeed to keep up this flowing by copious washings if the descents are not sufficiently rapid.

The window panes should be washed at least once a week, for the action of light is useful to health.

Every species of garbage both animal and vegetable requires great attention, their accumulation should therefore be prevented by the earliest possible removal of them.

Useless domestic animals should be expelled. Swine, rabbits, fowls, and pigeons, &c. should not be kept in confined places, or even in spacious courts where there is little air. The inhabitants of houses, particularly in the populous quarters, should in this respect watch mutually; they should besides contribute each one his part, towards the cleanliness of the streets especially where they are narrow. It is the interest of all.

3d. Chills are thought, by those physicians who have observed the cholera, to be among the causes most favorable to the development of the disease. Care should therefore be taken to dress warmly, and to guard the abdomen, and keep the feet from the action of cold. For this purpose it will be well to wear a woollen girdle, woollen or flannel under vests next the skin, and to use woollen socks, to be changed or washed when they become moist or dirty. The feet should be often washed in warm water. Overshoes should be worn when necessity obliges one to remain where it is damp or cold; in a word, people should so warm themselves that the feet should be protected from cold and moisture.

Many persons, particularly of the lower classes, have the very bad practice of standing with their naked feet upon the cold ground when they go to bed and more so when they rise, and even walk upon it. This custom cannot be too much censured, as it becomes particularly dangerous during the prevalence of the cholera.

The fear of chills, even in summer, should prevent people from sleeping with their sashes raised. There should be a moderate temperature within doors; for rooms that are kept too warm, render their occupants, more susceptible to the cold to which they are exposed on going out.

For the same reason it is proper to keep early hours and not pass part of the night in promenading, going to meetings, to the coffee houses, ale houses, taverns, &c. above all when the nights are very cold and damp.

4th. To endeavor to lead an active life, shunning as much as possible, excess of fatigue, is one of the best means to insure tranquillity. Occupations which involve men in disputes are injurious. The same may be said of labors which occasion a deprivation of usual sleep at night.

Mention has already been made of the usefulness of woollen girdles and socks; but these vestments should always be kept clean. *Cleanliness is always necessary to health.* They who have the means of taking occasional tepid baths, will do well to use them, but must remain in them no longer than may be necessary to clean their persons; care should be taken to wipe with warm linen, and to avoid immediate exposure to external air on leaving the bath. This precaution is specially useful when the season is cold.

Dry frictions are beneficial. They are easy to be administered by rubbing or having rubbed, in the evening, or better morning and evening, the body, arms, thighs, and legs, for a quarter of an hour, with a soft brush or a piece of woollen cloth.

In reference to dress, the season will best deter-

mine its character, but in no case should people dress too slightly.

6th. When the cholera prevails, the mode of living is a matter of great importance. Sobriety cannot be too strongly recommended. Very many cases are known in which the cholera followed the excesses of the table, and it is proved that *the intemperate are particularly exposed to this malady.*

Well cooked provisions, roasted and not too fat, fresh fish, eggs for those who have good digestion, and light and well baked bread, should form the chief nutriment.

Among vegetables, the least aqueous and lightest should be preferred. We do not think of excluding from these last, potatoes of good quality. We even approve of dry haricots, lentils, peas and beans *plain.* Crudities, such as salads, radishes, &c. are injurious. Salted provisions and salt fish should be avoided, and swine's flesh used as little as possible. Heavy and rich pastry are altogether prohibited.

In the season of fruits, it is necessary to be very cautious in their use, above all, when they are not perfectly ripe, for they may prove very dangerous. Cooked fruits are less exceptionable, but they should never be eaten in great quantities; and still less should they form the chief part of the meal. There is some food, healthy in general, but which, by a peculiar state of the stomach, is of difficult digestion with some. Every one, in this respect, should consult his stomach.

Beverages do not require less circumspection in their use. Very cold drink, taken when one is warm, is dangerous. There is no necessity for quenching

thirst, except when perspiration ceases; that is, no necessity for cold drink when one is in a sweat.

The consequences of this abuse are fatal, in proportion to the coldness of the drink. The water should be clear; filtered water is preferable to all other. It should be whetted with a very little vinegar or brandy when we wish to drink it pure, (two spoonfuls of brandy, or one of vinegar to a pint of water) especially if the season is warm, and one is obliged to do corporeal labor, which, by exciting perspiration, provokes thirst, and makes it necessary to drink often. Reddened water, that is, water to which a little good wine is added, is also beneficial. In short, water slightly aromatic may be successfully used, that is, having a stimulant infusion of peppermint, or camomile (a pinch of mint, or six heads of camomile to a half pint of boiling water, to which add, after cooling, half a pint of cold water).

Nothing is more pernicious than the abuse of strong liquors. It has been proved by a great number of cases, that the cholera attacks the intemperate, and even those who without making an habitual use of strong drinks, commit occasionally by enticement, a single excess of this kind.

The use of ardent spirits, taken alone and before breakfast, a habit so common among the lower class of work-people, and so hurtful at all times, becomes particularly fatal when cholera prevails. Persons who have this habit should eat something, at least a piece of bread, before swallowing the brandy. White wine should not be taken before breakfast, without the same precaution; and then only in the smallest quantities.

During the prevalence of the cholera, bitter brandy,

that is, brandy into which bitter and aromatic plants are infused, or rather Absynth brandy, is preferable to common brandy. Wine taken in moderate quantity, is a proper beverage during and at the end of a meal; but it should be of good quality. It is better to drink half the quantity and have the quality superior. New and sharp wines are more hurtful than beneficial. Red wine is preferable to white. They who have the means of mixing it with gaseous water, such as Seltzer water, natural or manufactured, will do well to supply themselves with this salubrious and agreeable drink.

Beer and cider, especially when new, when not well fermented, or when sour, dispose to cholics and diarrhœa, and thus become very dangerous. What has been said, applies with stronger force to sweet or new wine.

(Signed)
JUGE,
PARISET,
ESQUIROL,
CHEVALLIER,
LEROUX,
LEGRAND,
BARON DESGENETTES.

The Edinburgh Board of Health say, "Experience has shown, that the most essential precaution for escaping the disease is sobriety,—that intoxication during the prevalence of the epidemic is almost sure to be followed by an attack,—and that those addicted to drinking are the most subject to take cholera, and the most likely to sink under it. In like manner, strict attention to personal cleanliness,—to cleanli-

ness and ventilation of dwelling houses,—to warm clothing,—to regularity of hours for sleep,—to keeping as much as possible within doors at night,—and to taking food before going out in the morning,—may be relied on as important means of security."

The measures adopted in Edinburgh for security, appear thus far, to have been remarkably successful; but judging from all the facts known respecting the causes and progress of the cholera, it still remains very doubtful whether Boards of Health, organized as they are in this country with very limited powers, especially in small towns, are capable of doing much that is effectual towards preventing the disease, and there is reason to fear they frequently do much injury by exciting alarm, which their frequent meetings are sure to create, and by their assurances to the public that the very first case of cholera shall be announced, as if some exceedingly contagious disease was expected to arrive.*

In order to be able to do much good, when a disease similar to cholera is likely to prevail, Boards of Health require the power to *change the habits of the sensual, the vicious, the intemperate, and above all, the power to clothe and feed the poor, and to provide cleanly and comfortable dwellings for all classes in community.* But they have not this power. The only power which exists in this country to stay the scourge which has ravaged Asia and Europe, and now threatens us, is in the possession of the rich. On them must fall the

* An agent of a large manufacturing establishment in an inland town, far from any place where the cholera prevailed, told me that the day after a committee from the Board of Health visited his establishment, 30 or 40 of his workmen determined to leave, on account of the cholera, assigning this call from the Board of Health, as the only reason for their supposing the cholera was soon to prevail among them. No fear of the disease had prevailed previously.

burden of relieving the wants of the suffering, and of thus preventing and mitigating the severity of this dreaded epidemic.

Is the present epidemic cholera, a different and distinct disease from the common cholera morbus?

Sydenham described an epidemic cholera morbus, which prevailed in England in 1669. He calls the disease cholera morbus, and did not suppose the disease differed from the common cholera, except that this year, it prevailed epidemically. The Bombay Medical Board say that this description by Sydenham, applies exactly to the cholera of India. Therefore, the people of India might attribute their disease to importation from England.

The Report of the Royal Academy of Medicine, of Paris, says, 'The cholera of India is, as to its symptoms, the cholera of the ancients, and except in intensity and danger, differs but little from ordinary cholera.' The most intelligent physicians in England, are of the same opinion.

Dr. Kane, of Plattsburgh, N. Y. who saw much of the epidemic in Montreal, says that the physicians of Montreal view the present epidemic, or Asiatic cholera, as it is called, 'as differing in no respect from the endemic cholera of the United States and the Canadas, save that now it is epidemic. The same organs are affected, and the same symptoms exhibited.'

The common cholera morbus of this country is usually considered as not a very dangerous complaint; but most writers mention that it often is so, and frequently terminates life in a few hours. By

referring to descriptions of the symptoms of this disease, as found in old medical works, we find the vomiting, purging, cramps, spasms, and most of the symptoms which the Asiatic cholera exhibits, all alluded to. It is true, however, that most of the old writers consider the cholera to depend upon a *redundant* secretion of bile. This is, undoubtedly, an erroneous conclusion, and arose, probably, from regarding the effects of the disease as the cause of it. Later pathologists have shown, that the secretion of bile, especially an excessive secretion, takes place, only, after the disease has continued sometime, and not until reaction is produced. Sydenham, however, does not allude to bile being present, in the first discharges, but says they are thin and watery ; and Frank says, 'at first, the egesta are like water, then, as if flesh had been recently immersed in them,—sometimes they are white,' and adds, 'in the worst cases of cholera, the patients exhausted by profuse discharges, and their torments, become collapsed in five or six hours, and look no longer like themselves.'

No symptoms have been described as occurring in Asiatic cholera, that do not sometimes occur in common cholera. Some insist much upon the discharges being different. In allusion to this opinion, the Medico Chirurgical Review, says,—

"Great stress is laid on the nature of the ejected matters in cholera. If the fluids are colorless, it is a proof that the disease is Asiatic—if any bile or other colored fluids appear, the disease is English. Yet the India Boards, and, indeed, all careful observers, have acknowledged that the discharged fluids form no criterion of the disease. The Bengal Board, for example, tells us that 'the fluid ejected from the stom-

ach was watery; mostly tasteless, transparent, or of a whey or ash color. Sometimes it was *sour*, *green*, *dark*, like infusion of tea, starchy, mixed with mucus, and viscid. In very rare cases, pure bile was thrown up.' In respect to the alvine evacuations, they were 'generally watery, colorless, white or muddy;—*sometimes red and bloody*, *sometimes greenish and pulpy*, like half digested vegetables.' Is it not preposterous, after this, to make the distinction between Asiatic and English disease to consist in the color of the motions? Nimium ne crede colori!"

From these and numerous other facts which might be adduced, it is evident that the Asiatic cholera does not differ from our common cholera, except that the first is epidemic, and far more dangerous and intense, than we have been accustomed to witness the latter. This intensity is most strikingly manifested in the *immediate sinking of the circulation*, which is the most essential and diagnostic symptom of the present epidemic disease.

The question is also asked, if a similar epidemic ever prevailed before in this country? If such an epidemic has prevailed, I cannot find that any records of it have ever been published.

Mr. Webster, in his valuable and very erudite work on the history of epidemic and pestilential diseases, makes no mention of a similar disease, though his researches have been very extensive. He alludes however to destructive epidemics that have prevailed among the Indians, and other inhabitants of this country, which might have been of this character; but as the symptoms of these diseases are not given, we have no means of judging.

The Report on Spasmodic Cholera, prepared by a Committee of the Mass. Med. Society, says, 'the pestilential fever of New England, and which prevailed in Massachusetts, Connecticut, Vermont, &c., in 1806—7, and 1811—12, bore more resemblance to the cholera as to its *extension and duration* than any other disease that has prevailed in this country. Others have supposed the diseases are the same. But from an examination of the accounts of the New England pestilential fever, written by those who saw much of the latter, it is very evident they are diseases of a dissimilar nature. I am confirmed in this opinion by a physician* of high qualifications, who saw much of the fever, when it prevailed several years since, in Worcester Co. Mass. and who has recently had abundant opportunity of seeing the cholera at Albany and New York, and who assures me the diseases *do not resemble each other*, neither in the symptoms, nor in the appearances on dissection.

Cholera and other bowel complaints have been, however, far more prevalent and fatal some years than others, in this country. During the past year, a very singular and malignant disease prevailed at Warwick, a hilly town, in Franklin Co. Mass. Judging from the description of the disease which I have received from Dr. Jarvis, a very intelligent physician of Northfield, Mass., it bore a striking resemblance to the present epidemic cholera. The disease commenced in July, and in five weeks, 32 individuals were attacked, of whom 16 died. The disease commenced by distress at the stomach, extending to the bowels, then nausea, and vomiting, and frequent calls to stool, the discharges were white

* Dr. Flint, Northampton, Mass.

and watery. If the disease was arrested here, the dejections became bilious, and the patients recovered, but if not arrested, the vomiting increased; nothing could be retained on the stomach but opium; the discharges from the bowels constant, and of a thin fluid, resembling rice water; intolerable thirst, cramps of the abdominal muscles and extremities: the skin became cold, shrunken, and of a leaden hue, pulse weak, and often imperceptible; the mind not weakened or disturbed, the patients exhibiting but little anxiety for themselves, but conversed freely until the last.

Such is an abstract of the brief account of this singular malady which I have received from Dr. Jarvis; it is hoped he will soon furnish the profession with a more detailed history of the disease.

It is very probable that in other parts of the country similar diseases have appeared, and which have borne a very close resemblance to malignant cholera, and have been to a considerable degree epidemic. Such had been noticed in England, previous to the appearance of the cholera at Sunderland.

In the autumn of 1825, a disease broke out at Leeds, in England, which exhibited all the symptoms of the Asiatic cholera, vomiting and purging of a fluid resembling barley water, intense spasmodic contractions, cold, clammy skin, small, and often imperceptible pulse, skin contracted, and of a purple hue. Some lingered for a day or two, whilst others died in two or three hours.—*Medico Chirurgical Review for April*, 1832.

In August, 1831, violent cases of cholera occurred at a school in Clapham, Eng. Of 22 boys 20 were attacked with vomiting and purging, of an alarming

character in the course of six hours. The matter vomited was sometimes tinged with bile, but for the most part it was colorless and inodorous. A few died, but most of them recovered. On careful examination of the food they had eaten, nothing was discovered likely to cause the disease ; but it was afterwards ascertained that a very foul drain in the rear of the school house, had been accidentally opened a day or two before the disease appeared ; and the contents of this filthy receptacle were thrown into a yard adjoining the play ground for the boys.

A disease somewhat similar, though less violent has just occurred among the prisoners in the Mass. State prison, at Charlestown. During the night of the 5th of Aug. 115 of the convicts were attacked with disorder of the stomach and bowels, 49 of whom were so sick as to be sent to the hospital. The same day, 15 similar cases occurred at the House of Industry, South Boston. The physicians report that the disease is not spasmodic cholera, nor the common cholera of the country, and that they have not discovered the cause that produced it. None of the cases have proved fatal.

THE INFLUENCE OF FEAR IN PRODUCING AND AGGRAVATING THE EPIDEMIC CHOLERA.

Almost every person who has written upon the causes that produce the cholera, mentions *the fear of the disease*, as among the most frequent and powerful. This exciting cause, has, however, been much more frequently alluded to by the medical men in England, France, and the United States, than by those of India. We are therefore to presume that the *fear of the cholera*, has been greater, and more manifest, in the above named countries, than it was in Asia. This is not at all surprising, for if the disease had never been known as an epidemic, and was now to appear in this country, or any part of Europe, and be as fatal as it has ever been, the people in general, away from its immediate neighborhood, would not, for some years, be but very little excited or alarmed. But now we have added to the terror created by the daily ravages of the disease, the greater terror arising from the knowledge of its great mortality and general prevalence in other countries. This was not the case in India.

Again, the people of India are not, in general, a reading people, whilst the Europeans and Americans are so: and by means of newspapers and other periodicals, and the facilities for conveying information rapidly from one part of the country to another, every man, woman, and child, hears daily of the progress and the ravages of the disease.

So much has been written upon the disease, and read by the general community, that its history is not

only well known to all, but all the symptoms which may or may not be premonitory of cholera, are well understood. The exciting and predisposing causes, the articles of diet to be used or avoided, the remedies to prevent and to cure, are all treasured up, and have had the effect to create a morbid excitement respecting the disease, throughout the whole mass of community.

These are, probably, among the causes that make the fear of the disease to be far greater, and more injurious in its effects, and more powerful to excite the disease in this country, and in Europe, than it was in Asia.

It is, probably, the great influence of this cause alone, that makes the cholera nearly as violent and fatal here as it was in India, although *all the other causes are far less powerful.*

But not to take too much for granted respecting the influence of this passion in producing and aggravating the cholera, let us inquire if it is true that it has the power ascribed to it. Let us learn what the effect of fear is upon the human system. Let us first enquire of medical men of experience.

"Fear," says Haller, "diminishes the powers of the body, enfeebles the movements of the heart, and weakens the circulation. Influenced by this passion, the scurvy and other diseases become more fatal, putrid and contagious maladies acquire more malignity, and the body becomes more disposed to be affected by pestilential miasmata."

"Fear," says Dr. Falconer, (Treatise on the Influence of the Passions on the Diseases of the Human Body) "diminishes the power of the heart, enfeebles

the pulse, and sometimes to such a degree that the blood does not flow on opening a blood vessel. Fear also arrests the natural secretion, and produces this remarkable effect, which is, to render those who are frightened more subject to be attacked by contagious diseases."

M. Virey, (Dict. des Sciences Medicales, Vol. xxxix) says, that "fear is engendered when, according to Homer, the mind or soul descends from the body into the lower extremities, to *fly*." It produces derangement of the secretions, cold perspiration, a *recession of the blood from the surface to the heart*, and *diarrhœa*, a coldness and paleness of the skin, and when extreme, arrests the circulation of the blood and the secretions."

Dr. Burrows (On Insanity) observes that "fear produces embarrassment in the motion of the heart, the blood is detracted from the extreme vessels, as is evinced by a death like paleness. It depresses and enfeebles the action of the heart, diminishes the quantity of blood flowing to the brain, and debilitates the nervous power."

A late writer and distinguished physician, (Alibert, Physiologie des Passions,) says that "Fear is of a contagious nature, and its effect upon the body is to produce a retrocession of the blood from the exterior to the interior, and to derange or *suppress* all the functions of assimilation."

Other authorities might be produced to show the dangerous effects of fear upon the human system, its influence to produce and spread spasmodic complaints, and its tendency to become epidemic, during great public calamities : but it will be unnecessary to multi-

ply them, to demonstrate that this passion not only disposes a person to be affected by a contagious disease, but actually produces a disease and symptoms similar to the premonitory symptoms of cholera. Facts innumerable might be adduced to show that fear alone is sufficient, and often, very often, does produce the same symptoms that are now called premonitory symptoms of cholera.

I have seen repeated instances of diarrhœa produced by mental anxiety. I knew an instance of a clergyman of great sensibility, who for more than a year had a diarrhœa, from this cause, every Sabbath morning.

Long continued and anxious attention to the sensations and feelings of the bowels, will tend to disorder them. A person whose mind is constantly on the alert to detect some symptoms of disease of the stomach or bowels, who anxiously watches the effect of every thing he eats or drinks, upon the organs of digestion, will be very certain to create in them a morbid sensibility, which will be followed by indigestion, diarrhœa or other disease.

It may be said the cholera attacks children who have no anxiety, or have no knowledge of the disease. This may be true to some extent, but it should be recollected that children have been remarkably exempted from the disease. Besides, according to my observation, most children of five or six years of age, and upwards, have much anxiety respecting this disease, of which, to be sure, they know nothing, except that it is some approaching and fearful calamity. In children, fear, like other passsions, is soon effaced, but it is also more sudden and powerful in them, and far more likely to endanger them by its effects upon

their susceptible and delicate nervous system. A school in the interior of Massachusetts was broken up for the day by the fear of cholera, produced by the sickness and vomiting of one of the children. The cry that the cholera had come, produced the same symptoms in so many of the pupils, that the school had to be dissolved.

The distinguished physician* of a celebrated institution, situated within a short distance of the house where two persons died of cholera, in Hartford, told me that the day after this occurrence, all the inmates of the institution who had heard of the deaths by cholera, were affected by diarrhœa, the cause of which, he attributed to the influence of fear and anxiety.

From such, and many other instances of a similar character which have come to our knowledge, is there not great reason to apprehend that many, very many cases of cholera, if not produced by fear alone, are aggravated by it to a dangerous degree, and cases of common cholera, transformed through the influence of fear, into the malignant and fatal?

From several parts of the country, we receive published reports of Boards of Health, of mild cases of Asiatic cholera. These cases recover. But in a day or two after, we learn that the anxious and alarmed relatives, and the attendants upon these mild cases, who have been deprived of their usual rest, regular meals, and who are fearful of becoming sick, have sickened and died. Such cases are then attributed to contagion, as if the other causes in powerful operation, and which have produced the disease in all other countries, were not here in operation.

* Dr. Todd.

If the assertions of medical men in all parts of the world, respecting the influence of fear in producing disease, and especially the cholera, are not wholly groundless and false, then it is all important that medical men and public authorities endeavor to allay excitement, and if possible, the *panic* which universally prevails throughout this country, respecting the epidemic that prevails. Though, to be sure, this disease is a distressing visitation, yet there is abundant reason to believe, that with proper care in avoiding the causes that excite it, it will prove no more destructive of human life in New England, than Influenza has some years been, and far less so than Scarlatina and some other complaints have frequently been. But if the causes which are known to produce it, are not avoided, the disease will undoubtedly prevail, for as we have seen, quarantine regulations are worse than useless.

The general influence which renders certain exciting causes so powerful in producing the disease, is above us, and every where around us, and over which we have no control. We might as well attempt to stop the wind, or allay the tempest by quarantine edicts, as to prevent the spread of the atmospheric poison. Our hope is in our general habits of temperate but good living, our cleanliness and thin population, and above all, in our moral courage, and the indulgence, not only of the hope, but the *belief* that we shall escape if we avoid the exciting causes.

We know how powerful has been the influence of *faith* and hope, to lessen the ravages of other diseases.

When the plague prevailed at Messina, in Sicily, in 1743, and at a time when it raged with unabated

fury, the people took down from the great altar, the ancient image of their tutelary saint, the *Holy Mary, the Mother of God*, and carried it in procession through the streets. *From that day the plague began to decline.*—(*Turriano's treatise on plague at Messina.*)

But we need not seek far back in history, nor among an ignorant race of men, to find instances of the influence of *panic* in the diffusion of epidemic disease.

Dr. Stanford, of the Medical staff, communicated the following information to Dr. Ferguson. "In the autumn of 1813, he was stationed, with part of the British army, at Cadiz, when an irruption of yellow fever took place. Some of the medical men were staunch contagionists, and impressed their belief upon the corps to which they belonged; *in all these, the disease was most fatal to great numbers.* The men were half dead with fear, before they were taken ill, and speedily became its victims. But in the other regiments, where no alarm had been sounded, the the soldiers took the epidemic with steady courage, and generally escaped an attack, and if not, they recovered from it in a large proportion."

At the present alarming time, no duty of medical men, and all those who have influence over the faith of others, as regards the epidemic, seems more imperative, than that they should steadily endeavor to quiet public alarm, and constantly abstain from creating any fear as respects the prevalence of the disease, and its contagious nature. Hundreds will die of common cholera, if they are not assured, and *made to believe* that the disease which affects them, is not *the cholera* which their fears suggest. In such cases, every look and question and action of a physician, is very impor

tant. In such cases, he has it in his power, not only to endanger the sick, but to spread around a far more dangerous contagion than that of cholera, the contagion of fear; to drive from the bed of sickness, the anxious relatives and useful attendants, palsy the hand of charity, and create in those who are obliged to attend upon the sick, a disposition to a disease, closely allied to, if not the malignant cholera.

Never before has the world been visited by a disease, in which fear has had so dangerous an influence; for the passion of fear falls in with, and unites with the disease, and attacks and paralyses the same organs. Both fear and the cholera drive the blood from the exterior upon the heart, arrest or derange the secretions, hinder assimilation, and of course produce indigestion, and disorder of the stomach and bowels.

Upon this subject, the Medico-Chirurgical Review remarks, "Medical men will now see how much they will have it in their power, when the cholera comes, to pronounce or withhold sentence of desolation upon a community. The word contagion will be the word of doom; for then the healthy will fly their houses, and the sick be deserted; but a countenance and bearing devoid of fear, will command the aid, and inspire the hopes that are powerful to save in the most desperate cases."

If any should still be of opinion that the disease is contagious, and rely upon some few facts that have occurred in the progress of the disease in this country, such as the attendants on the sick being attacked by the disease, to justify their opinion, let them reflect that all these cases may have originated from terror and other exciting causes, without contagion having

any agency. Let them reflect that similar cases have occurred in other countries; but when the epidemic has passed away, and sanity upon this subject restored to the community, they have been seen to have originated from other sources than contagion.

In proof of this, I will cite a late resolve of one of the most intelligent Medical Societies in the world, the members of which, from their learning, and from their intimate acquaintance with the disease, were as well qualified to judge respecting its nature, as any other body of men whatever.

Westminster Medical Society, April 28, 1832.

This being the last meeting of the Society for the session, the discussion "On the nature, character, and treatment of cholera morbus," was concluded by the adoption of the following resolution, Dr. Granville moving, and Dr. James Johnson seconding:—

"That the Westminster Medical Society, having devoted the uninterrupted space of six months to the serious and dispassionate consideration of the malady which has been prevailing in England since the latter end of September last, and especially in the metropolis, and having heard the several arguments, depositions, doctrines and facts of the many members practically, as well as theoretically engaged in that important enquiry, declare, that, in the opinion of the majority of the society, the evidence brought forward to prove the said malady to be a *contagious disease has completely failed;* and that *every circumstance* which has come to the knowledge of the Society, shows the disease in question to have *begun, progressed,* and ended in the ordinary way of every other epidemic disorder."

APPENDIX.

NOTE A.

RECENT PROGRESS OF THE CHOLERA IN EUROPE.

The cholera, which first commenced its ravages in the north of England, in Oct. 1831, soon spread to Scotland, and reached London early in 1832. In neither of these places has it yet prevailed with great violence ; and by the end of April, had nearly disappeared. The disease extended into Ireland, and prevailed at Dublin and Cork in the month of April. The 24th of March, 1832, it first appeared at Paris, where it increased with great rapidity. Some days, the deaths amounted to nearly one thousand. The printed reports give 861 deaths on the 9th of April. It has been calculated that 20,000 died of cholera at Paris between the 24th of March and the end of the following April. We look with much interest for accounts from Paris, respecting the causes which rendered the disease so much more violent at this place, than it had been in other towns in Europe. We shall expect from the medical men of Paris, minute and important details relative to the appearances observed on dissection ; and also as regards the age, sex, professions, &c. most affected by the disease. The cholera began to decline in Paris towards the end of April, but has not yet entirely disappeared from that city. The latest accounts received from Paris, state that the disease was again on the increase. During the last six days of June, 271 deaths from cholera occurred in that city. We also know that it still prevails in several other towns in France. The cholera also prevailed the 1st of July in Dublin, London, Liverpool, Manchester, and several other towns in England and Ireland. The following is the latest account received :

Council Office, July 4.

ENGLAND AND SCOTLAND.—New cases, 378—deaths, 138—recovered 150—remaining, 787. Total cases from commencement, 14,919—total deaths, 5,541.

Since the appearance of the cholera in Europe, numerous treatises, lectures, essays, and letters respecting the disease have been published; and some of them contain the opinions of the most celebrated medical men in Europe. Many of the works, however, suggest no new views of the nature of the disease, nor do they recommend any method of treatment that has not already been alluded to.

Dr. Binaghi witnessed the disease at Warsaw, and has published his opinion respecting it. This opinion has been translated from the Italian, by Wm. Sampson, Esq., and published recently at N. York. Dr. B. thinks the cholera is a disease of the *nervous system*, and principally of the *nerveo-splanchnic* system. The direct cause of the disease he says is unknown. He thinks the cholera is not contagious, but may be an epidemic, produced by the variations of the seasons. He says it prevails longest in soils that are low, flat, humid, and populous. He advises, as preventive of the disease, to avoid exposure to sudden changes of weather, and to keep the skin and feet constantly warm, to eat moderately of nourishing food and avoid the use of unripe and acid fruit.

His method of cure is as follows. First, establish a point of counter irritation on some unimportant part of the body, by *moxa* or the actual cautery to the back, breast, abdomen or limbs, and keep all the surface of the body warm, and moderate the violent internal action by Sydenham's laudanum in large doses, and to give warm drinks. In the first stage of the disease he condemns the use of internal stimulants; but in the second stage he thinks they may be useful and necessary, and recommends the use of quinine, piperine, bark, &c. &c.

The opinion of the celebrated Dupuytren respecting the nature and treatment of the cholera, has also been published. He believes the cholera has its seat in the alimentary canal, and consists of an *irritation of the secretory apparatus*, and especially of the small glands or mucous follicles of the intestines. From these he thinks the superabundant evacuations proceed. To allay this irritation, and stop the discharges, he recommends the application of leeches, in the first instance to the abdomen, and the administration of frequent and large draughts of a strong decoction of poppy heads; but above all he depends upon the administration of sugar of lead, either in pills or solution. If the stomach can not retain the medicine, he advises the application of a large blister to the abdomen, and after removing the epidermis, to sprinkle one half of the wound with sulphate of morphine, and the other half with *pulverized sugar of lead.*

The following table exhibits the propoportion of deaths, to the population, in some of the large cities of Europe:—

The first column of figures shows the total population, and the second, the number of deaths from cholera, during the prevalence of the disease, up to the 19th of April, at which time it had disappeared from many of the places named, and had passed through its worst stages in the rest.

Moscow,	350,000	4,690	equal to	1 in	74
Petersburgh,	360,000	4,757		1	74
Vienna,	300,000	11,896		1	159
Berlin,	340,000	1,401		1	242
Hamburgh,	100,000	446		1	224
Prague,	97,000	1,335		1	72
Breslaw,	78,000	670		1	116
Konigsberg	70,000	1,318		1	53
Magdeburgh,	36,000	346		1	104
Braun,	33,000	601		1	54
Stettin,	24,000	250		1	96
Halle,	28,000	152		1	184
Bliberg,	22,000	253		1	77
London,	1,500,000	1,223		1	1,228
Edinburgh,	150,000	72		1	2,033
Glasgow,	180,000	395		1	455
Paisley,	60,000	204		1	294
Hungary,	8,750,000	188,000		1	46
Paris,	800,000	20,000		1	40
	If to these be added,				
Montreal,	25,000	1,250		1	20
Quebec,	22,000	1,790		1	12
N. York,	200,000	2,000		1	100
Albany,	24,000	311		1	77

It should be recollected, however, that the population of Quebec and Montreal, had been greatly increased by the arrival of emigrants, at the time the cholera appeared at those places. But notwithstanding this, it is a well established fact, that the disease has been full as malignant on this continent as in any part of the world, and even a greater number of those attacked, and who have received medical aid, have died in this country, than in India, among those similarly situated. This will be made evident by referring to the table of recoveries and deaths in India, page 149 of this volume.

The following important facts and tables, are selected from the 'Bibliotheque Universelle,' for Dec. 1831.

1. At Posen, a city containing 30,000 inhabitants, more men died than women, of the cholera. Of 541 deaths, 303 were males, and 238 females, and of the following ages:—

Under	1 year,		5
From	1	to 7	38
	8 years	to 14	35
	15	to 28	104
	29	to 42	145
	43	to 56	111
	57	to 70	73
Above	71		30
		Total,	541

At Berlin, the same facts were noticed, as is evident from the following account of the first 1,500 cases of cholera.

	Men.	Women.	Total.
From 1 to 10 years,	145	99	244
11 to 20	62	60	122
21 to 30	106	105	211
31 to 40	175	125	300
41 to 50	135	116	251
51 to 60	85	96	181
61 to 70	65	67	132
71 to 80	21	28	49
81 to 90	3	7	10
Total	797	703	1,500

2. At Posen, the makers of brick, and the pewterers, suffered more than those who belonged to other professions.

The table on the following page respecting the first 1,000 cases of cholera, is very curious and interesting.

Employments of the first 1,000 *Cholera Patients, at Berlin.*

	Men.	Women.	under 15 yrs. Boys	under 15 yrs. Girls	Total.	Cured.	Dead.
Those in superior employments and their families.	9	2	4		15	4	11
Physicians and their families.	4	1	1		6	1	5
Instructers and Instructresses.	5	2	1		8	3	5
Artists—painters—musicians.	4	5	1	1	11	2	9
Negociants.	18	9	3	1	31	9	22
Artisans—Masters.	53	32	17	14	116	28	82
,, Workmen.	69	34	11	6	120	37	74
,, Apprentices.	3				3	1	1
Weavers.	31	16	20	9	76	25	48
Watermen	29	2		1	32	3	29
Boatmen.	19				19	2	16
Venders of wine, and Victuallers.	6	8	2		16	5	9
Dealers in old clothes.	3	8	1		12	3	8
Tailoresses, Seamstresses, and Laundresses.		11			11	5	5
Domestics.	18	32	2	1	53	17	30
Laborers.	95	39	21	12	167	30	119
Infirmary keepers, and Grave diggers.	16	9			25	14	8
Guards for the night.	6	1		1	8	1	5
Widows and their families.		75	3	6	84	19	56
Bachelors, and women separate.		23	4	3	30	7	19
Pensioners.	11	18			29	11	17
Invalids.	5	4	3		12	1	10
Public Women.		6			6	1	4
Employments unknown.	16	27	11	10	64	14	50
Military men actively employed.	10		2		12	3	8
,, ,, on furlough.	3	3			6	4	2
Total	452	373	108	67	1000	263	666

3. The Jews have wonderfully escaped the cholera. At Posen, which contained 6,000 Jews when the cholera raged there, only 37 died of the disease. At Berlin, only six Jews had the disease during the two first months the cholera prevailed there. This exemption they undoubtedly owed to their accustomed sobriety, regularity and habitual prudence.

4. It is curious to observe that more cases occur on certain days of the week than on others. Usually, the most cases occur on Tuesday, and the least on Sunday. This probably arises from the excesses committed on Sunday. At Koenigsberg, the following number of sick were attacked from the 23d of July to the

28th of October, and the number of attacks for each day of the week is thus exhibited.

Sunday	276
Monday	282
Tuesday	348
Wednesday	286
Thursday	295
Friday	249
Saturday	234
Total,	1970.

At Berlin, the cases for the first seven weeks of the prevalence of the cholera at that place, occurred on the following days:—

	Cases.	Cured.	Dead.
Sundays	195	57	148
Mondays	245	60	151
Tuesdays	272	72	153
Wednesdays,	260	58	142
Thursdays	252	80	184
Fridays	225	63	143
Saturdays	258	55	136
Total,	1,724	454	1,057

5. At Berlin, several members of the same family were often affected, one after another, thus from August 29th to September 26th, 770 cases were reported. During that period, a second case happened in the same house,

After one day	65 times.
two days	34
three	23
four	16
five	21
six	7
seven	3
eight	2
nine	0

6. Other diseases were increased at Berlin, during the prevalence of the cholera. The total number of deaths from the 3d to the 23d of September, 1830, was 436; but for the same time in 1831, was 552, exclusive of cholera cases. These 552 persons died of the following diseases:—Marasmus, 158—Diarrhœa from dentition, 18—Convulsions, 52—Vomiting and Diarrhœa, 12—Apoplexy, 42—Nervous Fever, 52—Mucous Fever, 3—Bilious Fever, 3—Malignant Fever, 1—Dropsy, 40—Scarlatina, 4—Inflammation of the brain, 17—Of the Lungs, 6—Of the Bowels, 13—Strangulated Hernia, 1—Quinsy, 4—Colic, 7—Hemoptysis, 2—Cancer of the Uterus, 3—Palsy of the Lungs, 11—Scrofula, 9—Vomiting Chronic, 1—Disease of Heart, 4—

Of the Liver, 4—Of the Vertebræ 1—Old Age, 52—Still-born, 20—Abortion, 5—Suicide, 1—Deaths unknown, 6.

7. In Prussia, the order of the victims of the cholera, was as follows:—

1st. The aged men.
2d. Drunkards.
3d. The infirm, and valetudinarians.
4th. The timid.

The lower or poor class, furnished the greater part of the cases that terminated fatally. The *consumptive* generally escaped the cholera at Berlin.

Number of the cases of cholera that occurred in the Prussian States, previous to the 12th of November, 1831.

Provinces.	Cases.	Deaths.	Cured.
Prussia,	20563	2231	7418
Posen,	10542	6037	3631
Silesia,	2045	1191	594
Brandenburg,	4665	2827	1726
Saxony,	606	360	189
Pomerania,	1393	847	488
	39814	23493	14046
The cities of Berlin, Kœnigsberg, Dantzic, Posen, Breslaw, Magdebourg and Stettin, have furnished	8411	5269	2797

[*Gazete d'Etat de Prusse.*]

*Number of Cases and Deaths from Cholera in ten principal cities.**

Weeks.	LEMBERG. Pop. 45,000		RIGA. Pop. 49,000		DANTZIG Pop. 66,367		PETERSBURGH. Pop. 434,000		ELBING. Pop. 19,225		POSEN. Pop. 30,000		KONIGSBERG. Pop. 69,560		STETTIN. Pop. 21,680		BERLIN. Pop. 230,000		VIENNA. Pop. 290,000	
	cases	d'ths	cases	d'ths	cases	d'ths	cases	d'ths	cases	d'ths	cases	d'ths	cases	d'ths	cases	d'ths	cases	d'ths	cases	d'ths
1st	147	81	707	417	52	28	201	96	73	46	27	18	44	28	18	15	64	36	764	303
2d	337	177	1331	633	87	60	1975	778	81	49	65	36	265	129	50	34	163	107	442	252
3d	508	263	650	262	111	86	3492	1772	36	29	124	92	346	189	59	36	336	162	391	184
4th	774	360	635	204	153	114	1655	784	41	32	189	104	260	177	51	29	217	153	509	375
5th	792	415	682	221	154	121	659	426	40	17	114	81	231	152	37	29	249	195	434	242
6th	907	390	335	83	88	70	304	217	34	26	135	85	125	82	19	16	251	157	399	228
7th	631	389	251	49	60	37	165	91	31	15	87	54	103	78	16	15	271	164	326	185
8th	314	200	163	21	135	94	80	52	22	16	53	31	73	50	50	34	239	148	281	126
9th	286	158	78	10	165	113	99	40	9	5	26	19	48	39	20	17	135	104		
10th	105	80	65	13	167	128	84	36	6	7	33	21	63	38	23	16	141	84		
11th	72	47			102	72	41	20	4	2	13	8	100	54			64	49		
12th	50	28			60	42	30	10	1	1	1		111	66			63	25		
13th	34	11			36	28	18	9					143	79						
14th	23	7			18	14							84	49						
15th	15	10			11	11														
16th	12	4			22	16														
17th	3	1			8	5														
18th	1	1			3	4														

* In some of the cities, the disease still raged when this table was formed.

NOTE B.

PROGRESS OF THE CHOLERA IN CANADA AND UNITED STATES.

The first appearance of the epidemic cholera on this continent, was at Quebec and Montreal. At Quebec, the disease commenced the 8th of June, and in a few days after, several cases of the same disease occurred at Montreal.

The influx of emigrants into the Canadas, the present year, had been enormously great, and greater than any preceding year, as will appear from the following memorandum :

The arrivals, tonnage and emigrants at the port of Quebec, made up from the Exchange Books to the 9th July :—

Years.	Vessels.	Tonnage.	Emigrants.
1829	366	99,961	6,528
1830	421	108,659	15,935
1831	497	130,051	32,327
1832	544	146,112	33,848
From July 9th, to August 8th,			10,073
		Total in 1832,	43,921

By some, the emigrants were supposed to have brought the disease, but as I have shown elsewhere, some cases of the same disease occurred before any arrival of emigrants from Europe; and it should be recollected that the lower town of Quebec, or that part of it, called the *Cul de Sac*, is, in the summer season, one of the most filthy places in the world.

The following table will show the progress of the disease at Quebec, for the first two weeks of its prevalence there, though it includes only the Hospital cases.

Quebec.—Cases of Cholera in the two hospitals, from 8 o'clock, A. M. on the 8th, to 8 o'clock, A. M. on the 21st inst.

Date.	Remaining from last report.	Admissions.	Convalescent.	Discharged cured.	Dead.	Remaining.
8th	none	3	none	none	2	1
9th	1	13	none	none	6	8
10th	8	10	none	none	11	7
11th	7	13	none	none	11	9
12th	9	27	none	none	13	23
13th	23	77	9	none	40	60
14th	60	48	8	none	41	67
15th	67	68	17	2	37	96
16th	96	98	31	3	36	155
17th	155	47	62	5	37	160
18th	160	46	57	2	23	181
19th	181	66	46	12	32	199
20th	199	60	44	20	40	100
21st	199	37	46	6	32	198
Total		609			507	

On the 7th day after the appearance of the cholera at Quebec, 143 died of the disease; and on that and the succeeding five days, the deaths from cholera amounted to 711, being an average for the six days of 118 deaths per diem. From the commencement of the disease to the sixth of August, a period of *fifty-eight days*, the number of deaths from cholera at Quebec amounted to 1790.—*Neilson's Gazette.*

At Montreal, the disease raged with great violence, as will be seen from the following statement of the cases and deaths, from the commencement of the disease, to the 13th of July, inclusive :

	Daily cases.	Daily burials.	Total cases.	Total deaths.
June 10th to 15th,			1328	175
June 16,	381	86	1709	261
17,	474	102	2183	363
18,	261	128	2444	491
19,	338	149	2781	640
20,	165	94	2946	734
21,	15	76	3097	810
22,	109	52	3206	862
23,	83	31	3289	893
24,	51	21	3340	914
25,	44	33	3384	947
26,	27	23	3411	976
27,	21	25	3432	996
28,	22	20	3454	1016
29,	37	21	3491	1037
30,	32	22	3523	1059

	Daily cases.	Daily burials.	Total cases.	Total deaths.
July 1,	23	17	3546	1066
2,	13	20	3559	1076
3,	11	14	3570	1110
4,	23	17	3593	1127
5,	22	13	3615	1140
6,	19	9	3634	1144
7,	13	9	3647	1153
8,	14	11	3661	1164
9,	10	9	3671	1175
10,	7	6	3678	1184
11,	14	10	3692	1190
12,	15	10	3707	1200
13,	9	10	3716	1210

Since the above statement was made, the disease has continued to prevail in Montreal. For a few days, it seemed to cease, but then it broke out again with severity, and since the middle of July to the present time, Aug. 10, it has proved fatal to 10, 15, and 20 persons a day.

The cholera commenced at New York about the 24th or 26th of June. The second day of July, the Board of Health announced that eleven cases had occurred, all of which had terminated fatally, and that three new cases had that day been reported. The progress of the disease since then, has been as follows:

July.	Cases at dwelling houses	Hospitals.	Bellevue.	Yorkville and Haerlem.	Total of cases.	Deaths at dwelling houses.	Hospitals.	Bellevue.	Yorkville and Haerlem.	Total of deaths.
4th	7				7	4				4
5th	15	3			18	10	2			12
6th	11	13			24	8	7			15
7th	42	13	30*		85	6	6	13*		25
8th	29	13			42	10	11			21
9th	18	30	57†		105	4	10	14†		28
10th	44	22	43		109	6	13	25		44
11th	45	31	53		129	10	15	25		50
12th	32	39	48		119	10	16	25		51
13th	27	39	35		101	10	22	17		49
14th	43	43	29		115	15	29	22		66
15th	60	53	20		133	28	31	15		74
16th	92	50	21		163	45	32	17		94
17th	60	63	23		146	19	29	12		60
18th	65	59	14		138	22	36	14		72
19th	114	77	11		202	42	28	12		82
20th	132	66	28		226	48	42	10		100

* These include all in the Bellevue Hospital from the 27th of June to the 7th of July.

† These include all in Bellevue on the 8th and 9th.

July.	Cases at dwelling houses.	Hospitals.	Bellevue.	Yorkville and Haerlem.	Total of cases.	Deaths at dwelling houses.	Hospitals.	Bellevue.	Yorkville and Haerlem.	Total of cases.
21st	191	100	20		311	61	33	10		104
22d	154	76	9	2	241	50	35	5	1	91
23d	163	42	26		231	46	17	20		83
24th	188	51	22	35§	296	57	22	7	10§	96
25th	99	45	10	3‡	157	21	32	5	3‡	61
26th	75	48	14	4	141	23	21	7	4	55
27th	73	46	3	¶	122	23	18	5	¶	46
28th	93	49	1	2	145	37	26	4	1‖	68
29th	61	58	1	2	122	19	15	3	3	39
30th	62	35	3	3	103	14	19	3	3	39
31st	59	52	1	9	121	23	20	3	2	48
Aug. 1,	47	33	4	2	92	13	21	3	1	41
2d	47	24	0	10	81	14	17	0	3	34
3d	48	36	1	5	90	14	8	1	1	24
4th	48	35	3	2	88	17	11	2	0	30
5th	57	38	0	1	96	21	8	0	0	29
6th	60	38	0	3	101	21	15	0	1	37
7th	57	31	0	1	89	19	12	0	1	32
8th	50	32	0	0	82	12	9	0	0	21
9th	47	26	0	0	73	18	10	0	0	28
10th	60	34	0	3	97	18	7	0	1	26
11th	33	41	0	2	76	18	15	0	0	33
12th	32	33	0	2	67	9	12	0	2	23
13th	63	41	0	1	104	16	6	0	1	22
14th	18	24	0		42	8	7	0		15
15th	33	29	13		75	14	9	4		26
16th	39	37	3		79	14	11	1		26
17th	28	25	10		43	14	8	2		21
18th	38	38	1		76	6	13	0		19
Tot.	2859	1817	556	92	5323	937	789	305	38	2057

It is worthy of notice, that during the prevalence of the cholera at New York, the number of deaths from other diseases has been greater than usual, notwithstanding the number of inhabitants has greatly diminished; the same was observed at Berlin.

The whole number of deaths in the month of

July, 1830, was 664.
" 1831, 512.
Exclusive of cholera cases, " 1832, 751.

The deaths and diseases for the three weeks that the cholera was most fatal at New York, were as follows, from July 7th to the 28th:—Abscess, 1; Apoplexy, 9; Asphyxia, 2; Burns, 1; Casualty, 7; Cholera, malignant, 1741; Cholera Morbus, 34; Child-bed, 2; Colic, 1; Consumption, 83; Convulsions, 38;

‡ Haerlem not heard from. § Including two days. ¶ Not heard from.

Cramp in the stomach, 5; Drinking cold water, 1; Diarrhœa, 13; Dropsy in head, 22; Drowned, 5; Dysentery, 9; Epilepsy, 7; Fever, 4; Bilious fever, 3; Remittent, 3; Scarlet, 6; Typhus, 5; Flux infantile, 44; Hemorrhage, 1; Hemoptysis, 1; Croup, 8; Inflammation of bowels, 20; Inflammation of brain, 13; Inflammation of chest, 5; Inflammation of liver, 1; Inflammation of stomach, 2: Intemperance, 9; Locked Jaw, 2; Marasmus, 24; Measles, 18; Mortification, 3; Old age, 17; Palsy, 3; Peripneumony, 7; Rheumatism, 1; Small pox, 2; Stillborn, 25; Schirrus, 2; Sore throat, 2; Spinabifida, 1; Tabes Mesenterica, 4; Teething, 7; Unknown, 20; Whooping cough, 6; Worms, 7.

The disease appeared at Albany, July 3d, and since then, cases have occurred daily. From the commencement of the disease to the present time, August 18th, 1131 cases have occurred at Albany, of which 319 have terminated fatally. The disease appears now to be on the decline in that city.

A few cases of cholera occurred at Philadelphia, about the middle of July, but the disease soon subsided, until the 27th, when it again appeared, and has thus continued.

Number of persons attacked with the Spasmodic cholera, and the deaths by that disease which have taken place in Philadelphia and Liberties, from the 27th of July to the present time.

	Dwellings.	Hospitals.	Alms Houses.	Arch street Prison.	Total.	Deaths.
July 27	0	2	0	0	2	2
,, 28	0	6	0	0	6	4
,, 29	4	1	1	0	6	1
,, 30	8	6	0	1	15	7
,, 31	5	9	5	0	19	9
Aug. 1	16	6	1	0	21	8
,, 2	8	14	5	13	40	15
,, 3	13	13	5	4	35	14
,, 4	27	9	0	9	45	13
,, 5	26	28	11	0	65	26
,, 6	29	86	16	45	176	71
,, 7	78	38	17	3	136	73
,, 8	43	36	30	1	114	46
,, 9	94	35	24	1	154	58
,, 10	83	45	0	0	142	39
,, 11	76	42	8	0	126	33
,, 12	66	39	0	0	110	31
,, 13					130	49
,, 14					111	37
,, 15					73	23
,, 16					94	30
,, 17					90	26
					1610	615

The 5th of July, the cholera appeared at Detroit, where it prevailed for some time. The 17th of July, at Buffalo, and soon after, the disease prevailed in several towns on the banks of the Grand canal in the state of New York.

It appeared in several towns in New Jersey, about the middle of July, and the 24th of the same month it broke out at Norfolk and Portsmouth in Virginia, where it still continues to rage with great violence, especially among the colored population.

Several towns in Connecticut were slightly visited by the disease in the course of July.

It appeared in Rhode Island about the first of August; and the 15th of the same month, two cases occurred in Boston, and about the same time it commenced at Baltimore, and within a few days, several cases have occurred at Elizabeth city, North Carolina.

Since the first of July, more than *fifty towns* have been visited by the Epidemic or Malignant cholera, and the disease appears still to be extending in every direction. Among the towns which have already been visited by the disease, are Newark, Princeton, Trenton, New Brunswick, Elizabethtown, &c. &c. N. Jersey; Cleaveland and other towns in Ohio; New Haven, Hartford, New London, &c. Connecticut; Troy, Lansingburg, Rochester, Utica, Syracuse, Poughkeepsie, Lockport, Brooklyn, Schenectady, &c. &c. state of New York; Wilmington and Newcastle in Delaware. It has already appeared in 12 of the U. states, and from the past progress of the disease, we have no reason to hope that any state in the Union will be exempted from a visitation of the epidemic, though we trust it will be, in general, far less violent and fatal in the interior of the country, and in the small towns, than it has been in the large cities where it has already prevailed. Our expectation of a diminution hereafter in the violence of the disease, is founded upon the belief that other places will profit by the sad experience of the towns where it has already prevailed, and by attention to cleanliness, the purification of houses, the diminution of the inmates in small and crowded dwellings, the *clothing and feeding of the poor*, and above all, by a general abandonment of vicious, sensual, and intemperate habits, either stay the progress of the evil, or greatly lessen its ravages.

This universal and mortal epidemic has long called loudly upon mankind for a reformation in these respects; it has spoken to them by the voices of millions of their dying fellow creatures, to live temperately and soberly, and to provide for the sufferi g poor, *before* the disease comes upon them. When, therefore, mankind give attention to the past and present admonitions, and hearken to the voice of reason, and not to that of passion or appetite, then may we confidently expect the disease, which is now sweeping over our country with frightful mortality, will be entirely arrested, or its violence greatly mitigated.

HARTFORD, AUG. 20TH, 1832.

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